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HOFFMANN'S PATENT BRICK-KILN.

For a number of years scientific men, as well as practical brickmakers, both here and abroad, have endeavored to improve the method of burning bricks or other products of plastic clay. The escape of an enormous quantity of heat from the top of the kilns, the entrance of cold atmospheric air to the fires, and the loss of all the heat contained in the ready burned bricks, were the evils demanding improvement. To prevent either one or all of these losses of heat, a number of modifications of more or less practical value have been devised, but the great desideratum of a *continuous* kiln, which remedies all imperfections of the old method of burning has not heretofore been attained. The kiln represented in our cut saves, in its operation, all the heat which is wasted in common kilns: is more easily managed; and is well adapted for the burning of common bricks, lime, cement, fire-brick, pottery, for roasting ores, &c.

The principles on which the operation of this burning apparatus is based are very simple, though so entirely different from all kinds of existing kilns and furnaces, that a special explanation is required. Fig. 1 is a vertical section; Fig. 2 is a plan, half of it in horizontal section. The annular form is adopted for these kilns because it affords the greatest solidity, but this can be varied to admit of local circumstances. The kiln consists of circular channel, *a a*, which receives the objects to be fired, introduced through doors, *b b*, in the outside wall. Flues, *c c c*, lead from the hearth to the smoke chamber, *e e e*, which surrounds the base of the chimney, *d*. The communication of each flue can be cut off at will, by means of cast-iron, bell-shaped dampers, *f f*, Fig. 2. An intercepting slide can be lowered in grooves, *g g*, built into the walls of the kiln, immediately after each flue, so as to separate it at any distinct or equi-distant compartment. The fuel passes through apertures, *h h*, which are constructed in the arch, and falls through channels formed by the objects to be burned to a chamber in the hearth of the kiln, from which a certain number of small flues radiate to produce a free current from fire to fire.

Fig. 1

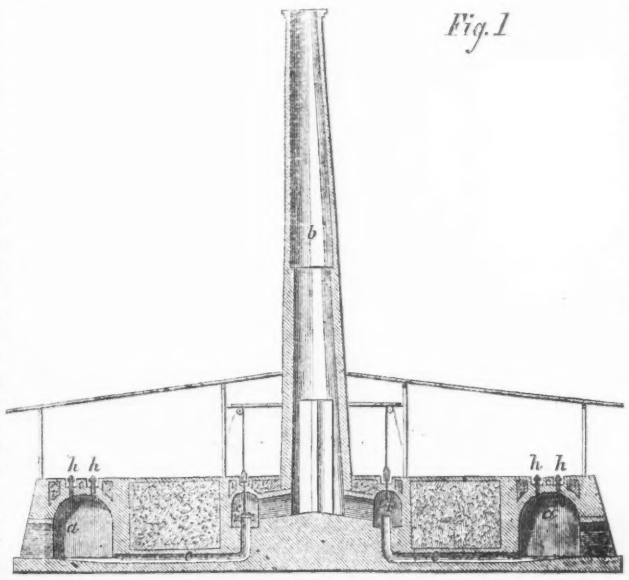
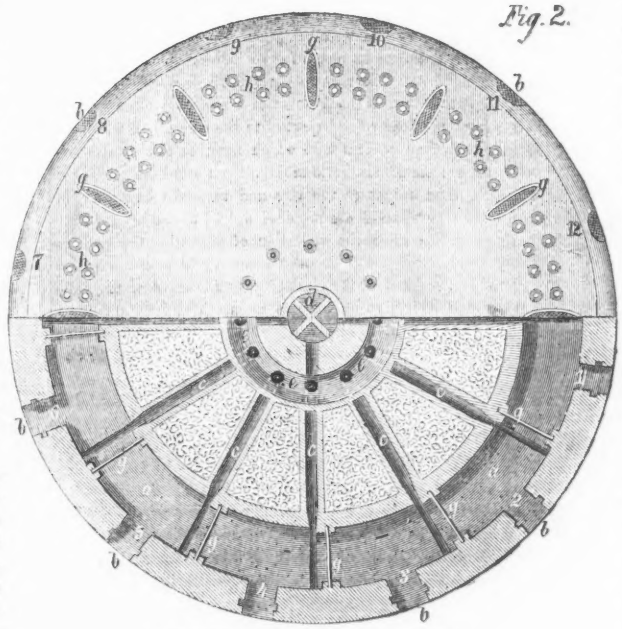


Fig. 2.



HOFFMANN'S PATENT BRICK KILN.

In describing the manipulation of this kiln, we take as example one of the kilns erected in this country. This kiln, being in full operation, has twelve compartments, to which there are twelve entries or doorways, *b b*, also the same number of flues, *c c c*, communicating with the smoke-chamber, *e e*, and just as many openings, *g g*, in the arch for the reception of the large intercepting damper slide; thus the kiln can be divided at any one of the twelve parts. For a better distinction these compartments may be numbered from 1 to 12, of which two, Nos. 12 and 1, we will suppose, are separated by the intercepting slide. The objects to be burned may be brick or tiles, etc., and the fire in full operation; the doors leading to the compartments, 1 and 2, being open—No. 1 for filling it with fresh goods, and No. 2 for taking out those burned and already cooled. The compartments 3, 4, 5, and 6, which are filled with burned goods, are gradually cooled by the air entering through the doors of No. 1 and 2, and as it passes on through warmer, at last glowing ware, it will result that the kiln fires are supplied with atmospheric air almost as hot as the kiln itself. In compartment No. 7 the fire is burning, and when its contents have reached the desired temperature, No. 8 will have arrived at such a degree from the absorption of the waste heat, that the fuel introduced from the top of No. 8 is instantly inflamed. The compartments 9, 10, 11, and 12, will be dried off and heated, one after another, by the waste heat, which passes through and expends itself on the contents of these compartments, and on its arrival in No. 12, meeting with the obstruction of the slide, it is conducted by the small flue, *c*, to the chimney with its temperature so lowered that it will only just support the draft. No. 1 being now filled, the slide between 12 and 1 is taken out and lowered again between 1 and 2. The damper of the flue to No. 12 is closed, and that to No. 1 is lifted; the door of No. 1 is closed, and that of compartment 3 opened, the contents of which will be sufficiently cooled to be taken out, while No. 2, which is emptied, can be filled again, the fire now being advanced to No. 8.

In this manner it is possible to burn bricks, lime, tiles, or pottery-ware, etc., without any interruption, filling and emptying the kiln at the same time; and it will be understood that in this kiln, at the same time, ware is burnt, gradually cooled, gradually heated, ware put in, ware taken out, and that the fires are supplied with red hot atmospheric air.

Among other advantages gained by the use of Hoffmann's Kilns, resulting from practice, the following are claimed:

Hoffmann's Kiln saves from two-thirds to three-fourths in fuel, burns the bricks uniformly, and saves in labor. The kiln, if erected according to plans, will last more than twenty-five years, without requiring repairs worth mentioning, all of which can be made while the kiln is in operation. There is much less breakage than in common kilns, as the bricks are hardly ever piled higher than a man can reach.

All information about the sale of state, county, or city rights, about the cost of erection, where kilns are in operation, etc., can be had by addressing Mr. G. L. Dethless, 213 East Broadway, New York City.

Cheap Manufacture of Oxygen Gas.

Few things would have more important results in chemical technology than the cheap manufacture of oxygen gas. The London *Mechanics Magazine* having seen the process of MM. Tessie du Motay and Marechal, in progress, thus speaks of its actual results. The oxygen, is derived from the decomposition of manganate of soda; and the apparatus for effecting this is simple and not expensive. In the first place, there is a boiler in which steam is generated at a moderate pressure. The steam is then passed through an ordinary superheater, a worm set in a furnace. From this it passes into a retort in which the manganate of soda is kept at a dull red heat. Here the decomposition is effected, and the staam and oxygen pass on to a refrigerator in which the steam is condensed, while the steam is condensed, while the oxygen passes on to a gasholder. When the evolution of oxygen ceases, the steam is shut off, and a current of atmospheric air is passed through the retort by which the manganate of soda is regenerated. Thus the operator starts with a charge of manganate (1 cwt. in the experiments under description) which never wants renewal. The charge of manganate in actual use after over 100 oxidations yields about 100 gallons of oxygen per hour, the cost of which is mainly the cost of the fuel consumed. One useful application of oxygen is shown at the same spot in a modification of the Drummond light. A mixture of oxygen and coal gas is burned, and a flame is made to impinge on a cylinder of magnesia agglomerated by chloride of magnesium by the process of M. Carlevaris, these cylinders are very compact and lasting, and are the very best we have seen produced for similar purposes. The light given we may hardly say is very intense, and the method promises to receive very extensive application in Paris

More Good News for Quartz Millers.

Under this heading, a Halifax paper has the following: A new kind of mortar box for quartz crushing mills has recently been patented in this country by Mr. George H. Nissen, of Christionia, Norway. The invention is likely to give a fresh impetus to quartz milling, not only here, but in other countries, as it saves from 50 to 200 per cent. more gold than any known process that can be applied to the reduction of ores on a large scale. The discovery is the result of mature reflection and practical experience, Mr. Nissen having operated for many years as miner, amalgamator and millwright on his own account in Colorado. The Orient Company at Wine Harbor were the first to test the value of the new mortar box, and so satisfied are they and other companies, of the advantages to be gained by its use, that the inventor already has received orders for fitting up six mills, with an aggregate of two hundred and forty stamps, upon his improved principle; and there seems no doubt of its ultimate adoption by all quartz millers who consult their shareholders and their own interests.

Ventilation of Collieries.

A writer in the *Astro-Meteoric Journal* says: As Mr. Pearson, author of the work on "Coal Mines, and how to work them with Safety," says he has "no statistics of the relative cost of furnace ventilation as compared with the fan system," I am happy to be able to supply him with some. Furnace ventilation is far more dangerous than fan ventilation, even if they have a dumb dirft for the return air to pass over, and can get the same quantity of air as the fan.—1. The air is not so regular; every time the furnace-man throws fresh fuel on the fire it causes the air to come in large quantities, and just at that time there is more liability of sparks going into the return, although the return is a great distance from the furnace.—2. Every time the furnace is cleaned there must be a great slackening of the air, and when the fire burns up brisk it must then draw away the gas that has been accumulating during the time the furnace-man was clearing the fire, and the furnace being at that time fired with greater force it is more liable to emit sparks than when fired moderately. Two furnaces would obviate the above, as they could fire more briskly one furnace to keep up the regular draught when they are cleaning the other. At a colliery which I could name, the heat from the furnace caused a wooden frame which was fixed in the upcast to fire and blaze; so the furnace fire at that time had to be nearly put out, that the frame might be got out and the fire put out. On another occasion, the soot in the shaft took fire, and large flakes of soot fell down the shaft. The furnace had again to be nearly put out, so that all the soot could be removed out of the shaft. Here, again, was a great accumulation of gas, and therefore great danger. 3. If a furnace is not

very carefully constructed there is great danger of firing the coal near to where they are built; they are also apt to fire any coals, boards, cribs, &c., which are in the shaft, unless well protected: and when any repairs are to be made, the furnace is obliged to be put nearly out.—4. Furnaces cannot draw the same quantity of air as fans. I believe they might construct fans to draw 200,000 feet of air per minute, and at as little cost as furnaces for fuel. Now for Fans.—1. Fans keep the air regular. The viewer and firemen can always tell by counting the strokes of the engine if the fire is right. They can hear the engine stroke in the upcast pit bottom, and they can hear above ground by listening to the exhaust steam within a circle of 1½ mile round it; so that the viewer, if he is in the neighborhood of the fan, has only to count the strokes to ascertain if it is drawing the quantity of air required.—2. We could do any repairs in the shaft, without danger, and still have the same quantity of air going up.—3. If the upcast is near to the drawing engine and a fan erected for ventilation, the cost would not amount to the same as the furnace, as the stroker for the drawing engine could look after the fan-engine; consequently the expense of firemen would be done away with. But expense compared with the lives of human beings should not be calculated or compared.—4. You might pass any amount of gas which may from time to time accumulate in the goaves, and which generally has to be removed in large quantities, over the fan without any fear of its coming in contact with flame, by misadventure. When tubbing (the iron casing for shafts) is used, the action of the heat, &c., corrodes the iron, and in the space of a few years scale after scale falls off, until it has to be replenished, or you stand a chance of filling the pit with water, and probably the lives of some workmen may be sacrificed.

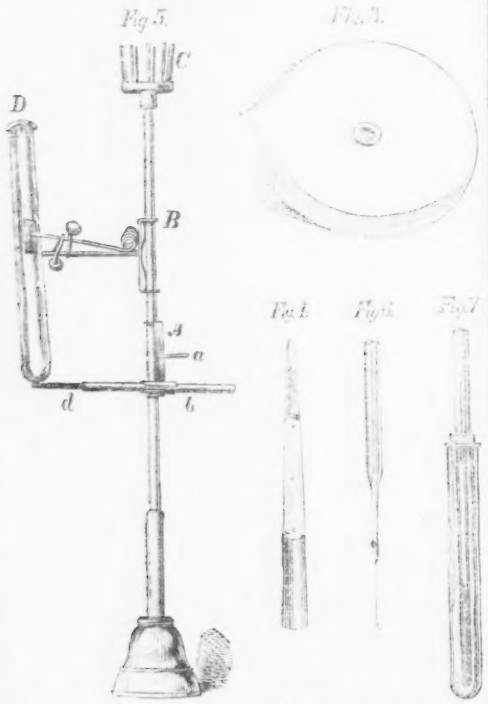
Original Papers.

GAS-FLAME REACTIONS—II.

By E. BUNSEN, Professor of Chemistry at the University of Heidelberg. Translated for the AMERICAN JOURNAL OF MINING, by H. LINDEMANN, Ph. D.

METHODS OF ASSAYING IN THESE DIFFERENT ZONES.

A. *Behavior of substances by themselves at high temperatures.*—This is one of the most important marks for the detection and distinction of substances. The possibility of producing, with the flame of the *Bunsen* burner alone, temperatures as high as with the blowpipe, and even higher, depends upon making as small as possible the radiating surfaces of the bodies to be heated in the flame. The apparatus for bringing the assay into the flame must, therefore, be extremely fine. The platinum wire, at the end of which substances are heated, must scarcely exceed the thickness of a horse-hair, and not weigh more than 0.034 grammes for a decimeter of length. It would be fruitless to attempt, with thicker wires, the tests hereinafter described. Substances which would attack the platinum wire, or such as will not adhere to its moistened tip, are held in the flame upon little asbestus rods, hundreds of which may be split from a moderately large piece of stiff, fibrous asbestus. These rods must not exceed in thickness the fourth part of a common match. Precipitating substances are crushed into the finest powder on the lamp-plate, Fig. 3 by the elastic steel blade *a* of the knife, Fig. 4, and



taken up on a strip of moistened filter-paper, of about one square centimeter surface. By burning this strip, holding it cautiously in the flame with the platinum pincers, or, still better, between two rings of very fine platinum wire, the assay may be obtained in the form of a crust, which adheres together, and may be handled in the flame without difficulty.

For heating substances a long time in any one zone of reaction, the stand Fig. 5 is used.

The arm *a*, fastened to the support *A*, turns and slides on the perpendicular standard, against which it is pressed by a weak spring, shown at *B*. This arm carries the glass-tube, Fig. 6, which is attached by fusion to the platinum wire to be heated. The asbestus rods are put into the glass tube *b*, Fig. 5, which is narrowed at the forward end, and may be slid in and out of the sheath of the support, and at the same time plays on the standard as freely as the arm *a*, which is fastened to the same support. The likewise movable support *B*, on the same stand, Fig. 5, has an arm with a clasp, for holding test-tubes, which are to be heated continuously in any given part of the flame. The small movable plate *C* is provided with nine pins, which serve to hold the glass tubes, Fig. 6, in use, or to be laid aside.

By means of these contrivances, a few particles of the substances to be examined are brought into the flame, and their behavior is observed, from the lowest to the highest temperature, the assay being examined, after every change of temperature, with a magnifying glass. Six different degrees of heat may be applied, which can be estimated with sufficient accuracy by the *glow* of the platinum wire, holding the assay, or brought into the flame for this special purpose. These six degrees are:

1. Below red heat.
2. Initial red heat.
3. Red heat.
4. Initial white heat.
5. White heat.
6. Beaming white heat.

It scarcely need be mentioned, that these degrees of temperature must never be judged from the glow of the assay itself, since the luminosity of different substances under such circumstances is a function, not merely of their temperature, but much more, at the same time, of their specific power of emitting light.

In heating assays the following phenomena are to be noticed:

1. *Luminosity.*—Substances are examined as to their power for emitting light by being put, on the platinum wire, into the hottest part of the melting space. The assay is of weak luminous power, when it emits less light than the platinum wire; of medium luminous power, when the two appear about equal in brightness; and of strong luminous power, when the glow of the assay surpasses that of the wire. Most solid bodies glow, with white light; some, as for instance, Erbina, with colored light. Some compounds, as, for instance, several of osmium, of carbon, of molybdanum, etc., volatilize, and throw off fine solid particles that make the whole flame luminous. Gases and vapors always show less luminosity than melted bodies, and the latter, in general, less than solids. The form of the assay must always be noted in the experiments, since the degree of luminosity is essentially dependent upon the nature of the surface of the body. Compact alumina, for instance, as it is obtained from the hydrate by slowly raising the temperature, has but medium luminosity, while spongy, porous alumina, produced by rapid ignition of the sulphate, has very strong luminosity.

2. *Fusibility.*—This is determined by the six glowing temperatures already mentioned. Observations are made with a magnifying glass, during the successive stages of rising temperature, whether the substance shrinks or expands, whether it bubbles at or above the melting point, whether it is transparent after cooling, and what changes of color it suffers, during or after exposure to the flame.

3. *Volatilty.*—This is determined by evaporating assay-beads of equal weight on the platinum wire in the melting space of the flame, and measuring (most simply by means of a metronome) the time required for volatilization. The instant when the substance is completely vaporized, may be very exactly known—often to the fraction of a second, by the sudden disappearance of the color imparted to the flame. In weighing for this test, the platinum wire which receives the assay-bead is protected from atmospheric moisture in a test-tube, as shown in Fig. 7. The weight of the wire and test-tube being ascertained once for all, and the required weight of the bead added to the opposite scale, the operation of preparing the bead is a very rapid one, since it is only necessary to decrease it by evaporation, or increase it by melting with it more of the substance, until it holds the balance even. The best quantity for the experiment is one centigramme. The spot in the melting space of the flame where the highest temperature obtains with perfect uniformity through all the comparative tests, is determined by the use of a platinum wire, held horizontally in the arm *a*, Fig. 5, and bent downwards in a right angle at the tip. This tip is moved slowly backwards and forwards through the melting space of the flame, and finally fixed at the point where it glows with the most brilliant white heat. The beads to be volatilized are then, one after another, held with the greatest care at the same distance under the point of the wire. Note should be taken that the dimensions of the flame are not essentially altered, during the experiments, by changes in the pressure of the gas.

[TO BE CONTINUED.]

ON A THEORY OF GOLD GENESIS;

Being the Substance of a Memoir Read to the AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE, at the Buffalo Meeting, August, 1866.

BY PROFESSOR HENRY WURTZ

EDITORS AMERICAN JOURNAL OF MINING:

A recent allusion on your part, in an editorial article, to this essay of mine upon the Genesis of Gold, has recalled my attention to the fact, that as yet no publication has been made thereof to the scientific world in general, save such as is implied in its public reading to the AMERICAN ASSOCIATION. As I would fain believe that the views presented in this essay are worthy of the consideration, and it may be, more or less, of the acceptation, of chemical geologists; and, apart from this, would at least hope that enlightened discussion and useful investigation may be awakened thereby upon this subject, which is at present of so great a practical import,—I therefore ask for it a place in your columns.

I should, perhaps, add to this note that, inasmuch as you have, in the editorial spoken of, made mention of my views presented in 1866, in connection with the part taken by Mr. WILLIAM CROOKES, the eminent editor of the *Chemical News*, in a discussion in the British Association, in 1867, it is incumbent upon me to point out that the lack of any general publication to the world of the said views, wholly exonerates Mr. CROOKES, in any case, upon this special head; and that, moreover, as to priority upon the special point here in question (that of the elementary state of gold in native sulphides, etc.), there can be no controversy whatever between Mr. CROOKES and myself, as this view has been both proposed and opposed before by others.

H. W.

INTRODUCTORY.

The current of thought upon these subjects, which has now for several years, with gathering volume, been flowing through my mind, had its fountain-head in one simple fact, first announced by me to this Association at the Baltimore meeting in 1858, having been discovered during the fall of 1857.

This fundamental fact was as follows: *Ferric solutions have the power to dissolve gold (as well as platinum) in small quantities, and even at low temperatures.*

I shall quote here the passage from the proceedings of the Association of that year (1858). It occurs in the course of a discussion of the "Gold Test" for nitric acid, contained in a communication upon "The Detection of Nitric Acid in Solution, etc."*

"An observation of a very surprising and unexpected character, made in connection with this mode of testing, may be appropriately introduced here. I found that solutions containing sesquioxyd of iron (no nitric acid whatever being present) have the power to dissolve gold. A solution of pure sublimed sesquichloride of iron was boiled with a fragment of gold leaf: the liquid soon became turbid, from deposition of a basic chloride as is always the case with neutral solutions of ferric salts, but on acidulating with chlorohydric acid it cleared up, and the gold had disappeared. Another fragment also dissolved, and so on. The action is accompanied by the production of protochlorid of iron, as is easily shown by a solution of ferridcyanyd of potassium. On filtration, dilution, and treatment with sulphohydric acid, the precipitate obtained in the liquid had quite a dark-brown color, and when washed, dried, and burned on platinum foil, left a residue easily proved to be spongy gold by burnishing in an agate mortar.

"A solution of pure ferric sulphate was also proved to dissolve a little gold, though less readily than the sesquichlorid, and to be reduced to ferous sulphate. Even at the ordinary temperature a solution of the sesquichlorid, standing for several days in contact with gold-leaf, gave a green tinge with red prussiate, indicating reduction. An acid solution of the sesquichlorid is also partially reduced by digestion for a few hours on the sand-bath with clippings of *platinum* foil. These solutions of gold are not affected by refrigeration, concentration, dilution, or filtration.

"I cannot find that this action of gold and platinum upon ferric solution has been announced before. If observed, it may have been attributed to traces of nitric acid or chlorine still remaining in the liquid, a cause of fallacy not existing when the *sublimed sesquichlorid* is experimented with. Metallic silver, however, has been observed to reduce ferric salts. GMELIN says: "Metallic silver takes up oxygen from a boiling aqueous solution of the sulphate of sesquioxyd of iron, so that sulphate of silver and sulphate of protoxyd of iron are formed. In the cold, metallic silver precipitates again, and the solution contains only sulphate of sesquioxyd of iron as before.'"†

Other reasons are assignable why this relation of ferric solutions to metallic gold and platinum should have eluded the observation of the multitude of chemists who must have encountered it in laboratory work. Thus, when auriferous ores, even such as are free from sulphides, (such, for instance, as are common among the gossans of a gold lode,) have been treated with muriatic acid, as must have occurred times out of number. As such ores almost invariably contain ferric oxyd in soluble forms, such a solution of the gold as I have pointed out must have almost always occurred; but even if it were shown that any chemist had suspected or demonstrated that such solution of the gold had occurred, his further investigation of the subject would almost inevitably have been arrested by the natural suspicion (in most such ores, indeed, amounting to certainty) of the presence of some oxyd which would engender free chlorine, like cobaltic oxyd or more especially manganic oxyd or deutoxyd; and for a demonstration of the solubility of gold in ferric chloride, proof of the absence of the manganic oxyds would obviously, in such a case, be essential.

I have two especial reasons for enlarging upon this topic:

1. It has been suggested, as I believe, without due consider-

* This paper appeared also in the *Am. Jour. of Science*, Vol. XXVI., page 51.

† GMELIN'S HANDBOOK; Edition of 1844; Vol. 3, p. 321:—"Beim Kochen der Lösung mit Silber entsteht schwefelsaures Eisenoxydul und Schwefelsaures Silberoxyd; aber beim Erkalten der Flussigkeit fallt das Silber wieder nieder unter Wiedererzeugung des Eisenoxydsalzes." GMELIN does not distinctly give his authority for their interesting reaction; though in the subsequent sentence reference is made to SCHAFHAETL (*Ann. d. Pharm.* 43,28). The subject, however, calls for verification and reinvestigation; its bearing to my mind at least, upon theories of the metamorphism of Silver Ores, and the mode of formation of native Silver, being more than probable.

ation, that I have been anticipated in this observation, even so anciently as the time of GLAUBER. This claim has even obtained, as I perceive, so important a sanction as that of STORER, who, in his Great Work, the "Dictionary of Solubilities," does me the *unmerited* honor to couple my name with that of GLAUBER, in giving his authorities for the solubility of gold in ferric chloride. In correspondence with our distinguished chemist ORDWAY, I have ascertained the basis of the supposition which attributes the observation to GLAUBER. This is, that in his "*Operis Mineralis*," published in 1657, he gives instructions for "*Separatio auri e silicibus, arenas, argillâ, aliisque fossilibus per solis spiritum, quæ alias eliquari nequeunt.*" ORDWAY, in his letter (dated February 11, 1859, years before the publication of STORER'S Dictionary,) goes on to say: "It is not plain, at first sight, how he could dissolve gold with simple muriatic acid, but *your discovery of the solubility of gold in sesquichlorid of iron*, clears up the matter. Glauber says that those stones are most likely to yield the precious metal which become red when burned in the fire, and so he has *probably* succeeded in dissolving a little gold out of ferruginous quartz."

The italics are mine, introduced to direct attention to the fact that ORDWAY, even apart from the reasons I have given above, has not inferred from the passage anything implying a prior claim on behalf of GLAUBER; and any such inference I must be allowed (altogether without disrepect) to deem somewhat fantastic: inasmuch as, so far from any evidence appearing that the materials experimented on by GLAUBER were free from the almost all-pervading oxyds of manganese, the latter were not then known to exist—GAHN'S identification of the element (about 1780), dating more than 120 years after, having closely followed SCHEELE'S discovery of chlorine, in 1774.

2. The other reason is that in spite of the apparent neglect with which chemists generally have treated a discovery which involves, as I opine, the genetic relation of the king of metals, some have not been so diskainful (to the fact itself), having indeed deemed it of sufficient importance to claim it as a novel discovery of their own. An example of this was the publication, some years since, by two French chemists, of a paper on the "reducing power" of platinum on ferric solutions, etc. I would also allude to the fact that the distinguished European correspondent of the *American Journal of Science*, NICKLES, when announcing the solubility of gold in his "ethereal perchlorid of iron," has not thought it necessary to say that I had previously found that the proposition holds also when the "ethereal" is left out.

I wish also to point out that this observation cannot but have important *practical* bearings. Thus, in any operation for the assay of gold ores, or the extraction of gold therefrom, by *aqueous* processes, ignorance or neglect of the solubility of the metal in ferric solutions would likely be (and probably has often already been) fatal. As an example, if such ore should be roasted, for the purpose of "desulphurization," and afterwards lixiviated, to extract soluble sulphates preliminary to amalgamation: as such sulphates must be chiefly ferric, they will of course carry with them into very dilute and unmanageable solution, the finer part, at least, of the gold. This will appear in a stronger light when we consider the fact that what is regarded as a good remunerative average yield of gold from an ore, say $10 per ton, is analytically little more than a mere trace, being but about 0.0015, or *less than one five hundredth of one per cent.* of the weight of the ore; and that therefore the proportion of soluble ferric sulphate produced in roasting, unless the latter be carried to an extreme degree, is likely to predominate enormously over that of the gold itself.

(TO BE CONTINUED.)

ON THE CHEMISTRY OF THE PRIMEVAL EARTH.

In a late number of this journal, we publish Dr. Hunt's lecture on the Chemistry of the Primeval Earth. We now republish, from the *Chemical News*, a criticism of this lecture, by Prof. David Forbes, F.R.S., which reviews the theory and arguments advanced by Dr. Hunt from the standpoint of chemistry:

In explaining the origin of this globe, Dr. Hunt adopts the nebulous hypothesis, imagining the whole of the chemical elements now constituting its mass, to have been originally present as "dissociated" gases, in a state of chemical "indifference" to one another, due to the intensely high temperature to which he supposes them to have originally been exposed. A lowering in temperature is then assumed to have brought about the chemical combinations of these elements, and the subsequent condensation of their compounds into the form of a sphere of igneous fluid matter, surrounded by a dense gaseous atmosphere.

The old hypothesis of Davy assumed a similar result as being due to the heat eliminated by the combination of the elements themselves; but in Dr. Hunt's lecture he does not explain how he imagines the intense heat which originally caused the elements to become "dissociated and indifferent" to have arisen.

According to Dr. Hunt, this igneous sphere when cooling commenced to solidify at its centre, and extended outwards towards its exterior so as to produce a globe solid to the core; his words being, "The cooling in a mass like this would be just like the cooling of a great bath of metal or sulphur—*i. e.*, in other words, the condensation or congelation would commence at the centre and extend outwards towards the surface."* It is almost superfluous to observe that every one knows that this is not the case with either sulphur or metals when cooling under ordinary circumstances; for chemists and others are accustomed in preparing crystals of sulphur or metals to allow such a melted bath to cool until its exterior has alone become solidified, and then, after making an orifice through the crust, to pour out the still fluid central mass, which consequently has not solidified first.

Dr. Hunt, however, explains that in the case of a cooling globe the central part would solidify first, owing to its melting point being much more elevated by the pressure to which it was subjected, and appeals to experiments of the late Mr. Hopkins† as conclusive proof that the melting points of bodies do become (*ad infinitum*) elevated in proportion to the applied pressure.

Without disputing that the fusing points of many bodies may be elevated by pressure, a reference to the experiments appealed to by Dr. Hunt will show that (in the present instance at least) they are not at all conclusive. Setting aside the experiments made on spermaceti, stearine, and wax, which being organic substances decomposed at comparatively low temperatures, and possessing no analogy whatever to the mineral compounds here under consideration, the other experiments of Mr. Hopkins were made on sulphur and metallic alloys, and consequently their results should be particularly applicable to the case of a "bath of metal or sulphur," alluded to as a simile by Dr. Hunt. On reference to the report in question, however, it will be at once perceived that the result of these experiments cannot at all warrant deductions so conclusive as Dr. Hunt has drawn from them; for Mr. Hopkins expressly states that in the case of the metallic alloys experimented upon, "*he has not detected any elevation of fusing temperature acquired by increasing the pressure.*" Again, the experiments made with sulphur afforded the following results:—

Pressure in atmospheres.	Pressure in lb. per square inch.	Fusing point in Centigrade.
1	15	107.2
520	7,790	135.2
793	11,990	140.5

In other words expressed, these figures show that the melting-point of sulphur under a pressure varying from 1 to 520 atmospheres, becomes elevated in temperature at the rate of 0.0594° Centigrade per atmosphere of applied pressure, but that subsequently up to 793 atmospheres, the highest pressure employed in these experiments, this rate diminished greatly, becoming little more than one quarter of the previous rate of increase, or only 0.0101° Centigrade for each atmosphere. It may not unreasonably be supposed, therefore, that greater pressure would still further lower this ratio, and eventually reduce its fusing-point once more to the temperature at which it melts when not subjected to any pressure, and it may even be imagined that subsequently, as in the case of water, a still higher pressure might actually cause depression instead of elevation of its fusing-points.

It is admitted now that there is a limit to the increase in density of bodies when subjected to pressure, or rather that after a certain point is reached, the increase of density of a body bears a less and less ratio to the actual compressing force employed; and it may be imagined that the same result would be also found to take place in the relations of the increase in temperature of the fusing-points of bodies to the pressure applied. It seems not improbable even that substances when once brought to the condition of maximum density might not then have the temperature of their fusing-points further elevated by increase of pressure.

Whether this be or be not the case, however, Dr. Hunt's argument would not be valid unless he at the same time brought forward proof that the substance of the earth is homogeneous throughout, or made up of substances possessing the same or nearly the same fusing points as that of the original external crust or layer. Now, there seems no grounds for believing that such can be the case; for since the mean specific gravity of the earth is about double that of the substances composing its known exterior crust, it would appear all but certain that the interior mass must be composed of substances different in composition, and much more dense than those known to form the superficial parts of the globe;‡ and this would indicate the great probability of their being in the interior of the earth an immense accumulation of metallic bodies of great density; and as the fusing-points of such substances are acknowledged to be immensely lower than that of those composing the known crust of the earth, it might be advanced in opposition to Dr. Hunt's views that this difference would more than counterbalance the tendency to solidify at the *centre* in the case of the fusing points being really even considerably elevated by the effects of pressure.

For these and many other reasons, some of which will be afterwards noticed in the course of this discussion, the author cannot agree with Dr. Hunt that the earth is solid to the core, but believes that there is still some vast reservoir or reservoirs of molten matter in its interior.

In entering into the consideration of the chemical history of the earth from the moment of solidification, Dr. Hunt now bases the whole of his views of the reactions and the entire exposition of the chemical changes which took place in this, newly-created globe upon the constitution of the atmosphere with which it was then surrounded; it consequently becomes of the highest importance to ascertain by careful scrutiny as to whether his views upon this subject are sound and likely to meet with acceptance in the chemical world.

This atmosphere, according to Dr. Hunt, was intensely acid and of great density, and contained all the carbon, sulphur, and chlorine in combination respectively, as carbonic, sulphurous and hydrochloric acids along with the nitrogen, steam, and "a probable excess of oxygen."

That the nitrogen, steam, and carbonic acid would be there, is readily admitted, but it may fairly be inquired whether any chemist can believe, after the grand scene of general combination of the elements occurring under the circumstances assumed by Dr. Hunt, that (even if possible?) it could be at all *probable that an excess of oxygen* could exist along with the vast amount of sulphurous acid which was present, if that gentleman's premises were correct. Further, the improbability of such an atmosphere containing a mixture of heated hydrochloric and sulphurous acid gases, may be inferred from Dumas' researches; that chemist having long ago shown that these gases when mixed together, react and mutually decompose one another with the formation of water, chlorine, and sulphur.

The strong affinity which sulphur has for the metals is well known, as also the fact that sulphurous acid itself is readily decomposed by many metals, with the formation of metallic sulphides and oxides; and the inference which the author would deduct therefrom is that so far from all the sulphur having at this crisis of chemical combination gone into the atmosphere as sulphurous acid, it in reality united itself to the metals, and thus formed dense sulphides which at once sunk through the external and lighter fluid layer of the still liquid igneous sphere, and there remained in its interior protected from oxidising action.

The existence in Dr. Hunt's imaginary atmosphere of all the chlorine in the form of hydrochloric acid is also protested against. Independently of the probability of, in such event, the oxygen and hydrochloric acid gas reacting upon one another, and reproducing clorine with the vapor of water; it is contended, that hydrochloric acid was not even likely to have been formed at all under the circumstances here alluded to. Amongst the most stable, if not the most stable of all the compounds of chlorine are the alkaline chlorides—for example, chloride of sodium or salt, and it may be gathered from Dr. Hunt's lecture that he cannot but admit that there must have been abundance of metallic sodium present at the moment of the general combination of the chemical elements. Chemists therefore will require of Dr. Hunt an explanation as to why he, in such a case, supposes the chlorine to have united itself with the hydrogen to form hydrochloric acid, instead of at once combining with the equally accessible sodium, for which chlorine is known to possess a stronger affinity than for hydrogen; chlorine unites even at ordinary temperatures and without compulsion directly with sodium, and still more energetically at more elevated temperatures; and that its affinity for sodium is far stronger than for hydrogen is shown by the fact that hydrogen does not decompose chloride of sodium even with the assistance of heat, whilst, on the contrary, the chloride of hydrogen or hydrochloric acid is decomposed and yields up its chlorine to the sodium and various other metals, even in the cold.

When summing up the arguments advanced on both sides, as to the constitution of the atmosphere which enveloped the earth at this early period of its existence, the writer confidently believes that chemists will agree with him in disputing the probability and even possibility of such a chlorhydric and sulphurous atmosphere as Dr. Hunt has attempted to realize, and thinks with him that the main differences between the air of that period and the present age would be in the large quantity of carbonic acid and water, along with probably a much less amount of oxygen.

To elucidate the chemical reactions which characterised this stage of the earth's history, Dr. Hunt states that they were "just what would now result if the solid land, sea and air were made to react upon each other under the influence of intense heat;" it is well known that temperature may greatly modify chemical action, but as Dr. Hunt's ultra-igneous theory‖ deals with the effects of heat so immensely intense as to "dissociate" and vaporize even the most refractory bodies, it must be admitted that his comparison is quite correct, but at the same time it is not admitted that the results of such reactions would be such as Dr. Hunt represents them to be when he states, "to the chemist it is at once evident that from this would result the conversion of all carbonates, chlorides, and sulphates into silicates, and the separation of the carbon, chlorine, and sulphur in the form of acid gases;" on the contrary the author believes that the chemist who knew anything about geology would remember the vast stores of carbonaceous matter locked up in the earth's bowels, and deduce therefrom that the carbon of these would react upon the sulphates, converting them into sulphides without their evolving all the sulphur they contain in the form of acid gas, as Dr. Hunt would have us to believe—nor would he admit that all the chlorides were converted into silicates, or that as Dr. Hunt elsewhere tells us, that the chlorine of the sea-salt would be expelled into the atmosphere in the form of hydrochloric acid gas; for although he would be fully aware that silica, sea-salt, and water if exposed to heat under forced circumstances, as for example when heated in confinement or when the vapor of water and salt be passed over highly heated silica, that in such case silicate of soda would be formed and hydrochloric acid evolved; this, however, would not be the case in nature in the event alluded to by Dr. Hunt, for the water in the sea would be all evaporated at the first approach of the heat, leaving the anhydrous salt, which, being also volatile, would be next sublimed as soon as the heat became more intense; the unaltered quartz remaining behind, before it had even attained a temperature sufficient to have effected the supposed reaction.

The sea, which would cover the earth's surface as soon as this had cooled down sufficiently to allow of the condensation of the vast accumulation of aqueous vapor in the atmosphere, would, the author believes, become salt the moment it appeared upon the surface of the globe, since the water would at once dissolve the chlorides formed by the direct combination of the metals with chlorine, as previously alluded to, and thus produce a solution of the chlorides of sodium, potassium, calcium, magnesium, &c., along with iodides and bromides which owed their origin to similar reactions. As Dr. Hunt does not attempt to explain why the chloride of sodium should so preponderate over that of potassium or the other alkalies, this question may be reserved for future research and speculation.

Dr. Hunt, however, accounts for the saltness of the sea by an explanation totally different from the above, and after stating that "the depressed portions of half-cooled crusts would be flooded with a highly heated solution of hydrochloric acid," proceeds to inform his audience that this acid deluge would extract the soda along with some other bases from the silicates of the crust, and thus form the salt sea.

Should chemists, however, adopt the author's opinion that the chlorine really had at once united with the sodium to form salt and other chlorides, then it naturally follows that Dr. Hunt's views of this stage in the earth's history are untenable.

For the sake of argument, however, let it be supposed for a moment that Dr. Hunt is correct in insisting upon that all the chlorine and sulphur had ascended into the atmosphere as acid vapors; then it must be asked, what became of the sulphur? As Dr. Hunt did not inform his audience in his lecture, we must inquire ourselves. The sulphurous acid would naturally convert itself sooner or later into sulphuric acid, and would be condensed and fall down onto the globe, and be carried into the sea.

As now, sulphuric acid is more powerful than hydrochloric acid, it would at once turn out the hydrochloric acid, and convert the chlorides into sulphates, so that, instead of the ocean formed by Dr. Hunt's theory being a salt sea in the ordinary acceptation of this term, it would really be a solution of glauber-salt or sulphate of soda.

There are many reasons for estimating the probable quantity of sulphur contained in the globe as fully as large, if not larger, than that of chlorine; but as the equivalent of sulphur is only 16, whilst that of chlorine is 35.5, it would not require as much sulphur as even one-half the amount of the chlorine present in the sea, to convert the entire amount of salt contained in the ocean into sulphate of soda.

Dr. Hunt next makes the surprising assertion that all true limestones are the result of the precipitation of carbonate of lime thrown down from a solution of the chloride of calcium by the action of solutions of carbonate of soda. As Dr. Hunt does not in his lecture advance any evidence whatsoever in support of this statement, it is considered to be purely hypothetical; and it is believed that chemists will still adhere to the opinion that limestones have not been so found, but that they are essentially the result of organic action, as has been very satisfactorily demonstrated by the careful study already made of these rocks by geologists, palæontologists and microscopists.

It is not probable that either chemists or zoologists will agree with Dr. Hunt's further assertion, that "animals can only appropriate the carbonate of lime which they find ready formed," but that they will consider these animals capable of utilising the other lime salts in the sea until, at least, Dr. Hunt brings forth convincing evidence to the contrary.

Sorby's admirable microscopical investigations have clearly demonstrated that the magnesian limestones and dolomites in reality only represent ordinary limestone beds, altered *in situ* by the infiltration of magnesian solutions. Dr. Hunt, on the contrary, claims to have discovered that magnesian limestones, dolomites and gypseous beds have originated through chemical "reactions hitherto unsuspected," and that his experimental researches have proved them to have been formed at a time when the surface of the earth was covered by a dense atmosphere of carbonic acid. In reply to Dr. Hunt, the author would, in plain words, declare his firm belief that geologists, palæontologists or zoologists will be as little disposed to consider his conclusions even likely to be true, as chemists, on the other hand, will admit his reactions and experiments to be new.

The former will content themselves with informing Dr. Hunt that every geologist should be aware that the great development of such beds took place at an epoch in the world's history when air-breathing animals (both vertebrate and invertebrate) lived upon the face of the earth, and with expressing their surprise that Dr. Hunt could imagine these animals living in an atmosphere of carbonic acid; whilst chemists, on their part, would not be disposed to regard the mutual reactions of the sulphate or chloride

of magnesium with carbonate of lime, as possessing novelty, and would further inform Dr. Hunt that, notwithstanding he has considered the results of his experiments on magnesian compounds under an artificial atmosphere of carbonic acid as worthy of being laid before the *Academie des Sciences* of Paris, that for nearly, if not more, than a quarter of a century these very processes have been in general application on the large scale in the manufactories of preparations of magnesia both in England and Ireland.

In concluding these remarks, the author can only but record his protest against the soundness of the arguments propounded by Dr. Hunt in his explanation of the origin of granite and the formation of the metamorphic and eruptive rocks, both ancient and modern, as in this present communication the space at disposal will not allow of more extended discussion. On some future occasion, however, an attempt will be made to take the chemistry of the formation and alterations undergone by these rock-masses also into consideration.

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* *Geological Magazine*, vol. iv., p. 361.

† British Association Report, 1854, page 57.

‡ Knowing that there is a limit beyond which substances increase but little in density when subjected to additional pressure, it may fairly be assumed that the materials of the known external crust would have attained their maximum density long before the conditions here required would have been arrived at; a simple calculation will show that if we regard the mean density of the earth as 5.5, and that of the surface crust as one-half this, or 2.65, and further imagine the earth to be composed of three concentric layers of equal thickness, and of densities increasing respectively in arithmetical progression, there would be respectively an outer crust of specific gravity 2.65, an intermediate zone of specific gravity 10.7, and a central kernal of specific gravity 18.8. If, instead of three such zones, more than this number are imagined, then the calculation will show that the specific gravity of the central kernel will come out still higher than 18.8.

§ *Traité de Chimie*, t. i. p. 146.

¶ The idea of igneous action propounded by Hutton and his followers the Plutonists, is but a milk-warm theory when compared to that of Dr. Hunt, who, whilst protesting against the earth having been formed "entirely by fire," discourses eloquently of its creation from a state of ultra incandescence at temperatures so elevated as would have been far beyond the conception of Hutton himself.

* *Geological Magazine*, Vol. iv., p. 360.

Mining Summary.

GOLD AND SILVER.

Colorado.

The success of the late fair at Denver seems to have been complete. The display of silver bullion and ores was very fine, and if we may credit local reports, made the respective merits of the Georgetown and Argentine mines the all-absorbing subject of interest. The Central City *Register* says of this display: The premiums offered by the society under the head of "Mineralogy and Geology," were one of $20 for the best "collection of minerals," and one of $10 for the next best. This did not give much encouragement to exhibitors of ores and bullion. The owner of a mine might send a sample of ore weighing a ton and assaying $200 or $1,000; he might even exhibit the product of 20 or 100 tons of ore, but it would not constitute a "collection of minerals." Rev. Lewis Hamilton, of Central, had on exhibition his fine cabinet of mineral, geological and fossiliferous specimens, but the committee could not recommend the awarding of the first premium to him because Byers, Dalley & Schirmer had on exhibition a collection which, though not as extensive, rare and various, was more strictly "mineral." Next year the classification of articles in this line, and the premiums offered therefor, will be greatly enlarged, none disputing the right of the mining interest to stand second, at least, to the agricultural. The U. S. Coin lode, belonging to the Brown S. M. Co. of Georgetown, put in the best appearence under this head. There was a sample of pure ore weighing 300 lbs., the quality attested by seven silver bricks weighing 1283.1 ounces, coin value, $1489.35, taken from a little more than seven tons of the ore by the reduction works of Garrott, Martine & Co. The Baker lode, belonging to the Baker S. M. Co. of Georgetown, was represented by about 200 lbs. of ore in several pieces, the silver which was designed to accompany it not having been got ready in time. There were three silver bricks weighing 584.74 ounces, coin value, $619.39, from 54 cwt. of ore from the Belmont lode, East Argentine, owned by the Pine S. M. Co. There were several hundred lbs. of copper ore from the Partridge lode, Independent district, Jefferson county, which assays (Dr. Munson, of the Denver Mint,) 40 per cent. pure copper. Choice specimens are nearly twice as rich as that. The cropping, says Mr. Partridge, is 14 feet wide and nearly two miles long, and there is a solid ledge eight feet wide, like that on exhibition. Colorado will soon ask the world recognition of the value of her copper ores, and get it. There were large, handsome samples of pure ore from the Burroughs, Briggs and Terrible lodes, and smaller commoner ones from the Nuckolls, Lily, Argentine, Leavenworth, May, Omaha, Wentworth, Monarch, Comet, Morrison, Henry Clay, and Bogue ..... Some dissatisfaction is apparent from the report of the committee on minerals. We quote from the Georgetown *Miner*, of the 17th ult.: The committee on minerals at the late fair in Denver announce, in their report accompanying the award of the premiums, that mining is a branch of industry second only to that of agriculture in this territory. What makes this statement still more surprising is the fact that all the gentlemen of the committee are prominently connected with the mining interest. It is a well-known fact that agriculture in Colorado can never be successful unless her mines prosper—that our farm products could never compete in price in eastern markets with those of the Western States, and that there are at least three men in this territory engaged in mining, for each one who follows agricultural pursuits. ..... The same paper is authority for the following: Our bullion report for the week is light, owing to the quality of the ore upon which Garrott, Martine & Co. have been running, and the extensive repairs making at the smelting works. Garrott, Martine & Co. report 972.3 ounces, coin value $979 46, currency value $1273 29. Dr. Johnson reports bullion to the amount of $500 in coin, currency value $650. Total, coin value, $1479 46, currency value, $1923 29..... We have just been shown some very fine specimens of ore from the Rainbow lode, situated near the Brown lode, and about fifty yards above the trail that leads to the latter. The shaft on the Rainbow is down thirty feet, and the crevice is wide, showing a splendid ore vein. The ore, principally argentiferous galena, assays sixteen hundred dollars silver per ton. Besides the galena, the vein carries some very fine and almost pure white quartz intermingled with iron and copper pyrites. The Rainbow is the property of Mr. J. H. Haggerty..... While in Denver we were presented with some very fine specimens of gold bearing ore from Granite district. The best of these was from the Kettie L. lode, the property of Charles P. Slade, Esq. The ore of this lode is a brown quartz, carrying cubes of black iron and an incredible amount of free gold, easily separated by pulverizing and the pan. Some of the prospects made in this way have yielded astonishing results. Granite district is a new one situated in the southern part of the territory, and its ores being exceedingly rich and less refractory than the other gold ores of Colorado, promise to place the new district ahead of all others as a gold producer as soon as the necessary improvements are made. The common stamp mill process is all that is required..... We saw, recently, a piece of Mohawk ore that had been roasted, spangled with silver..... The works of Garrott, Martine & Co. will next week commence the reduction of one hundred tons of ore from the Baker lode, West Argentine. ..... The works of Garrott, Martine & Co. commenced reducing five tons of ore from the August lode on Thursday last. We saw at these works a day or two since a ton of closely selected sulphuret ore from the W. B. Astor lode. They commenced crushing this ore on Monday last..... The shaft on the Hunkadora lode is now down fifty feet in width, with a two-foot ore vein of rich sulphurets of silver and argentiferous galena..... Mining is being actively prosecuted upon many of the lodes in this district. A large amount of ore is being raised, and nothing prevents large bullion shipments but the want of works for reduction..... The Nuckolls lode is being actively worked, and a large quantity of first class ore is being raised to the surface. The east shaft is sunk to a depth of sixty feet, showing a sixteen inch ore vein in the bottom..... The Young America lode, in Downieville district, is being actively developed, and shows the finest vein of silver ore in these mountains. The accessible position of the lode is far ahead of any others we have yet seen..... Among the many new and rich discoveries made the present season is the Silver Eagle lode, owned by Pratt & Co., situated upon Republican Mountain, in the immediate vicinity of the Elijah Rise. The lode has permanent, smooth walls, a crevice of between five and six feet, with a fifteen inch ore vein of sulphuret of silver that assays from $1,200 to $2,000 in silver to the ton of ore..... The Morrison lode, situated on Columbia Mountain, is being actively worked by its owners, Messrs. Partridge & Morrison. The shaft is now sunk to a depth of thirty feet, disclosing a solid ore vein two feet in width. The crevice is full five feet in width, between smooth, permanent walls. The remaining three feet of the crevice is filled with a decomposed ore. The vein promises to be equal to any in the district..... Mr. Miner showed us a few evenings since, some four or five beautiful silver buttons, weighing from two to five ounces each, that he extracted from ores from different lodes in this district, by crushing and boiling in salt. They were tests from small amounts of ore..... The citizens of Empire are doing nobly in mining matters. We learn that there was $2,800 in gold taken out and shipped from that place last week, which was, of course, credited to Gilpin county. We know, from personal observation made by us during a former residence in this county, that the lodes in and around Empire are second to none on the continent..... The Central City *Register*, of the 22d ult., gives the following items: For the last three months the Black Hawk Company have been taking out money at the rate of $400,000 a year. Last week they cleaned up 312 ounces of gold from their stamps, and two or three pans they have set up and are running on blanket tailings. Common tailings are accumulating at their mill very fast, too—containing perhaps an ounce of gold per ton. The material run last week was 60 to 70 per cent. rock, yet it paid $250 (currency) per cord—about $36 per ton ..... The Linden lode, West Argentine, has opened out from six inches of argentiferous galena on the surface to about eighteen inches twelve or fifteen feet down. The owners have been getting out a lot of ore—ten to fifteen tons—which will be put through the smelting works if possible before cold weather sets in. From $150 to $200 per ton are expected from the assays..... The pay in the La Plata lode continues good in the deep shaft, it having held since last struck for twenty feet downward. Messrs. Reese, Reuse & Bruckner are getting ready their machinery for silver amalgamation as fast as they can. They hope to be ready to operate some time during next week..... The Lily lode, situated perhaps 300 yards above the Brown and Coin, on Republican Mountain, Georgetown, rivals those famous lodes in promise. The shaft is twelve feet long and twelve feet deep, and shows fourteen inches of galena the whole length, which assays from $500 to $4,000 per ton. It is believed it will work as high as the Coin..... Work has been resumed by Charles W. Fiske on the Davenport lode, in the gulch between Central and Mountain cities. There are two shafts sunk to considerable depth and drifted together; crevice two to three feet wide of pyrites in a gangue of soft talcose matter like that of the Pewabic. It was worked a year or two since in a stamp mill, but didn't quite pay expenses. Mr Keith has assayed it, and it is being hauled to his mill for reduction ..... The Boston and Colorado company is now under the control of Mr. Whitney. Mr. Conley has contracted to keep six men at work sinking a shaft at the intersection of the Kansas and Sullivan lodes, just back of the mill, for two years, two ten hour shafts a day. The shaft paid well on the surface, and now produces handsome rich ore in massive chunks. The company's shaft on the Burroughs, now about 250 feet deep, is to be sunk in the same manner to a depth of 400 feet..... Operations in the Ten-Mile district, which lies beyond Breckinridge, in Summit county, are chiefly confined to the excavation of a tunnel into Fletcher mountain, by the Bullion and Incas companies, jointly. The tunnel has now reached a depth of 270 feet, and is contracted for 400, to be done by next June. The Bullion and Incas companies are to be consolidated, and be under the charge of W. R. Rockwell ..... The proprietors of the Live Yankee Reduction Works contemplate putting up one of their furnaces at Georgetown..... A reliable corre-pondent of the same paper says: I have been looking at the silver lodes recently discovered in Mountain House district, adjoining the gold lodes of Gregory district on the north and northeast, the silver cropping out on Mishler hill and running west perhaps a quarter south, across North Clear creek, and on to near the head of the right fork of Fall river. These consist, so far as I was able to examine, of La Plata, the Blue, May and De Profundis, on Mishler hill, half a mile south of the Four-Mile House; the Leavenworth, Tows and Humboldt, a mile west, 25 degrees south, really in Missouri gulch, and the Omaha, two miles further west, just northwest of Quartz valley. The course of La Plata is south 75 degrees west. It has been explored by three or four shafts from 30 to 80 feet deep, and a drift 40 feet in length. Messrs. Teats & Co. are working it, delivering the pay rock at the works of Reese, Kraus & Bruckner, who are erecting suitable machinery for its reduction. They had fourteen inches of pay rock twenty feet from the surface, which continued in a drift eastward thirty-five feet; thirty-five feet deeper the pay streak had widened to twenty inches. Then there was twenty feet in the shaft with no pay, but it is again opening. The walls are well-defined, vertical, and from four to six feet apart, the solid leader of the vein, both in the shafts and drift, from twelve to twenty inches in width. It is a flinty quartz, white, tinged with pink on the surface, with argentiferous galena and minerals of copper disseminated through it. Choice pieces assay $1,000 per ton; twelve to twenty tons have been mined and taken to mill. It is expected to work from $50 to $100 per ton. Crossing the line of these workings at an acute angle, which extend 200 feet on the lode, are workings of about the same nature and extent, belonging to Mr. Havens of Black Hawk, who claims the lode as the Circassian under a previous discovery. From the shaft where the two lines cross, Mr. Havens has taken perhaps ten tons of pay-rock. There has been one trial of the contested claims before a jury, which failed to agree, and both parties are continuing their improvements. The indications are fair for a true silver vein of average power. The May is about 100 yards north of La Plata, and has the same characteristics so far as developed, except that it carries more copper. The working shaft is 30 feet deep, no defined walls as yet, but a vein of quartz 12 to 20 inches thick, bearing argentiferous galena, minerals of copper, and chloride of silver. The Blue is near those described, shaft 40 feet in depth, well curbed, 8x12 feet in the clear. This space seems to have been filled with loose vein matter. The thirty tons of ore at the shaft is to all appearance as rich in copper as in silver. The De Profundis is south of La Plata, has been sunk upon 60 feet, shows the same general characteristics as the others mentioned above. The two latter are now being worked. A thousand yards west is the discovery of the Leavenworth, a galena lode, traceable half a mile by the blossom, struck in place for 500 yards, evidently a "mother vein," as Mr. Reese would term it. On No. 2 west a shaft is being sunk, now 50 feet deep, well curbed, 4x9 feet in the clear. Here the outcrop for 50 yards in length was galena. It gave out on sinking, was succeeded by a coarse bastard quartz, now in its turn giving place to galena, mixed with considerable gangue and earthy substances. The crevice is about 6 feet wide, quartz vein 12 to 20 inches, assays from $50 to $150 a ton. Fifty rods east from this, shaft rock is found from which silver oozes in globules on exposing it to a wood fire. The locality is easily accessible from the Denver stage road or from North Clear creek via Missouri gulch. The Leavenworth belongs to the Belden & Tennal Mining company who are working it night and day, the men living on the ground. The Tows is further west, and a little south of the Leavenworth, in the mouth of Missouri gulch in fact. It has been opened for 200 yards by three adits, everywhere showing three feet of vein matter; in lower adit small quantity of argentiferous galena, assays $1,000 a ton, silver; in upper adit two veins of galena 30 inches apart, six inches in the [illegible], assays from $600 to $1,000. Being opened by the B. & T. M. Co. The Omaha lies west of North Clear creek on the same course two miles from the Leavenworth, traceable by the blossom half a mile, has been struck and exposed along for 600 yards. Discovery shaft is 12 feet deep, no walls yet defined, core of vein a foot thick, solid flinty quartz everywhere in place, bearing galena; any of the rock sweats silver on exposure to heat. Six ounces smelted in a bullet ladle cupelled 30 cents in silver, and the slag was left covered with silver pimples. Prof. Hill assayed a sample which went 300 ounces to the ton. Fifty rods west of discovery a shaft has been sunk 15 feet, crevice three feet wide, solid quartz 12 inches. This leader of the lode is also exposed in a dozen gopher holes between the two shafts. No lode which shows so uniformly for such a distance can be other than a true fissure of great power. The Leavenworth, Tows, and Omaha belong to the B. & T. M. Co., who are opening all of them, as well as two other lodes near Chimney Rock in Chase gulch, the Black quartz and Ranney. On the last two their shafts are more than 100 feet from the surface and sinking. Mr. Belden went East some year or so ago and raised a liberal working capital against an immense amount of mining property acquired and held by himself and Mr. Tennal in all parts of Colorado. This they are using prudently in the most thorough prospecting. It is to be hoped on every account that they will succeed and their example be generally imitated

Montana.

A correspondent of the Virginia City *Post* of the 12th ult. says: Away up on the divide of Little Moose creek, which empties its few hundred inches of water into Warm Spring creek, one of the western tributaries of Deer Lodge river, fifty miles by a fine natural wagon road from Deer Lodge City, and fourteen miles by a rough trail from Phillipsburgh, lies the richest and largest auriferous quartz vein in Montana, named by the lucky discoverers the Atlantic Cable. John B. Pierson, Alex. Atkins and Jonas Stough are the fortunate owners of this incalculable rich mine. The first discovery of free gold bearing float rock was made on the 7th of June, '67, and the latter part of the same month the ledge was found. The course of the vein is southeast, and has not been opened on any but discovery claim, where a shaft is now being driven down by a force of nine men, forty-five feet long by twenty feet on the surface, but narrowing in width to the size of the vein, as it descends, being, at a depth of twenty-two feet, fifteen feet between the walls. Some doubts were entertained at first as to the immense deposit of ore being a regular vein, but since well-defined wall rocks, the lower a pure white granite, the upper a firm limestone, were found, these doubts have vanished and a bona fide ledge shows itself. The quartz is of every hue and texture, from pure white, thickly studded with fine gold, to cinder-like burnt masses of decomposed rock variegated with sulphurets and oxides of copper, similar to the Dakota lode in Beaverhead county. The whole vein of quartz is intersected with crevices, which widen out into pockets in places, filled with decomposed quartz and dirt, which is hauled down the hill over an easy grade three-fourths of a mile to Little Moose creek, and run from a common pudding box with quicksilver through half a dozen joints of sluices, yields from 20 to 30 ounces per day. Four wagons and three men to wash the dirt, compose the whole force for this part of the labor. Headings and tailings of course are carefully saved to be crushed at some future period. The assay of average quartz, 1200 tons of which lie ready to go to the mill, as tested by Bohm & Molitor, of Helena, is $427.87 in gold and $1.56 in silver to the ton. A quarter of a mile below the wagon road an arrastras, of simple construction, driven by a diamond wheel 21 feet in diameter, crushes select ore and makes handsome clean-ups. But this machine not working fast enough, the Cable company are now erecting two more of a better model and with a capacity of five tons each per diem. The frame work of superior workmanship is most complete. A twenty foot overshot wheel will drive both, from a shaft so geared as to run one independent of the other, and allow as many more to be added as the power will permit. The beds will be 12 feet in diameter and built of hard, fine gray granite, large quarries of which are in the vicinity, and heating flues below the beds will keep the pulp warm during the winter. The castings will be run at Hendry's Helena Foundry, and the first machinery manufactured in Montana. Both arrastras and wheel will be enclosed in a substantial building to permit work to go on all winter. The richness of this ledge of course caused the organization of a new mining district, and the starting of a town, which glories in the name of Cable City. It was laid out the 22d of September, and as yet boasts of but few houses, but a large number of stakes indicate the location of lots. This place is as yet free of idlers and loafers, and may be approached without passing a toll-gate. A dense forest surrounds the ledge, and will furnish all the necessary timber for years to come. Numerous ledges have been staked, but are not developed enough to deserve notice..... The Helena *Herald* of the 10th ult., says: Work upon Helena hill is progressing more actively than for some time before. Mining is being done upon about a dozen claims, and not less than forty men are engaged in it. On nearly every claim the plow is brought into requisition for the purpose of loosening the earth, and, in some places, the ground is worked from the grass roots down to the depth of five feet. The claims are by no means equally rich, paying from $5 to $20 per day to the hand. Upon one claim a rich streak has been struck which recently paid thirty-six dollars per day to the man, two days in succession. In this streak spots have been found which prospected one dollar to the pan. Within the last few days, unworked ground has been taken up which is paying six dollars per day to the hand. Its owners are old Californians, and laugh at the assertions of croakers that the country is played out. They are of the opinion that all the ground in this vicinity, and particularly that between the Big Ditch and Last Chance Gulch, northwest of the town, will pay good wages. The claims upon Helena Hill are not worked to bed-rock, that being several hundred feet below the surface. We are told that the gravel would pay to the depth of a hundred feet if hydraulic power could be used to advantage. But this is now impossible, from the fact that the tailings cannot be dumped upon the claims in Last Chance Gulch, and there is, at present, no other place to them. When the claims in Last Chance shall have been thoroughly worked

out, we have great faith that hydraulic mining will be carried on very extensively and with great profit upon this hill.

Nevada.

Mammoth District.—Mr. G. W. Emerson having recently returned from this district, reports matters are progressing very quietly but encouragingly. Captain Knapp was steadily developing the property of the Mount Vernon company through shaft and tunnel. The tunnel, which was projected to cut upwards of twenty veins in the length of one thousand feet, has been pushed in the hill seven hundred feet, in the course of which several veins have been cut. A good working shaft has been sunk to the depth of one hundred and fifty feet, intersecting the tunnel at the depth of sixty-five feet. One ledge of the great width of twenty-three feet has been cut through in both shaft and tunnel. It produces a good quality of ore, samples of which were shown to us in the assay office of David Lundbom. Some of the pieces showed a good unt of ruby. Mr. Emerson examined the ledge where it was developed in the tunnel, and observed mineral in the mass, but several strata of fair width would produce ore, he thought, that would yield $100 of silver per ton. What is still better, in his judgment, the entire vein would produce ore within the present milling range. The grade of ore developed in the lower drift of the shaft had greatly improved, and Mr. Emerson was favorably impressed with the systematic management of Capt. Knapp no less than with the property of the Mount Vernon company. Another company, of which a Mr. Ferguson is the superintendent, was preparing to resume work. One of the ledges owned by the company is well-known as the American Flag, and has been opened one hundred feet by incline, along various points of which it shows a good class of ore.

Cortez District.—The *Reveille*, Oct. 14th, has the following correspondence: The mines that are being worked at present in this district are turning out well. The larger number are lying idle for want of capital. Nearly all the work is done on the St Louis and the mines of the Mount Tenabo company, which are producing a large amount of good rock. The St. Louis company had about one hundred tons of second-class ore worked at the mill of the Mount Tenabo company, which yielded $130 per ton. The first-class from this mine, considerable lots of which were worked at the Keystone mill, near Austin, yielded some $250 per ton. The company is putting up buildings and such other improvements as will be necessary to work the mine during the winter, and under the management of the superintendent, Mr. S. Wenban, the mine cannot fail to be a paying one. The Mount Tenabo company is preparing to work its mines, and to keep the mill going during the winter. It is the pioneer company of Cortez, and is deserving of credit for its perseverance in developing its property to its present condition. There should be no longer any doubt of the character of the mines of the company, in the face of their appearance and the bullion produced by them. The extensive property of the company is well managed by Mr. H. H. Day, formerly of the Savage mine in Virginia City. In my judgment, in less than two years the Mount Tenabo company will ship more bullion than any other in Eastern Nevada.

Reese River District.—For the two weeks ending Oct. 5th, the twenty-stamp mill of the Manhattan company reduced 180 tons of ore obtained from the North Star mine, which produced 16,500 ounces of bullion—at the rate of about 250 ounces to the ton—says the *Reveille*. The same paper, October 12th, notes the breaking of a shaft in the mill, which stops operations for a short time. .....The ore from the Diana mine, on Lander hill, has improved greatly. Thirty-two and a half tons have just been reduced at the Metacom mill, the assay of the pulp of which was at the rate of $271 per ton..... Since the opening of the Metacom mill, a short time ago, it has been conducted with the finest success. It is by far the most powerful ten-stamp mill in the Reese River section. The weight of each stamp exceeds eight hundred pounds, and drops ninety times a minute. There are six large barrels in the amalgamating room, and there are four reverberatory furnaces, but both departments are greatly behind the capacity of the battery, the power of which is wonderful. In a test of its capacity last week it is claimed that it crushed ten tons of ore in twelve hours. The mill is under the management of Mr. John Howell.

Hot Creek.—The first lot of bullion produced by the mill of the Old Dominion company at Hot Creek, was recently brought into Austin. It amounted to about 6,000 ounces, and was obtained chiefly from ore of the Old Dominion mine belonging to the company. The mill works satisfactorily. From present appearances there is likely to be more than sufficient custom ore to supply the mill, and already the owners of mines in Hot Creek and the adjoining districts are urging the addition of ten stamps. The Old Dominion mine is improving daily in appearance and in the quality of its ore, although it is scarcely opened below the surface, and it is believed that it could fairly supply ten stamps.—*Ibid*

Philadelphia District.—The Westport company, according to the Belmont *Reporter*, Oct. 12, have now ample assurance of the richness and extent of their ledge, and will have no hesitancy in providing the necessary means for its more thorough development and permanent working of its ores. It is situated about seven miles west from Belmont, in a locality known as Spanish belt—a belt of slate extending northeast and southwest along the eastern slope of a chain of mountains dividing Ralston's Valley from Smoky Valley. The character of the formation in which this ledge is found is exactly the same in appearance as that which surrounds the Highbridge. The ores resemble those obtained from the Combination and Transylvania mines, and are probably quite equal in point of richness. The mine is owned principally by parties in Carson City and San Francisco, who at an early day next spring will construct the necessary mills and reduction works for successfully reducing and working these ores.

Battle Mountain District.—The Unionville *Register*, Sept. 21, says: A party of enterprising men left town this week, armed *cap-a pie*, and taking with them a full supply of mining implements and provisions, intending to open up and develop some of the promising mines in Battle Mountain district. This district is about seventy-five miles to the eastward of this town, and near the line of Lander county. General Safford, when here, made a visit to this district, and was, we are informed, highly pleased with the mines examined. The ledges are said to surpass in quantity of metal the famous ledges of Gold Run district, but whether equally rich, remains to be seen, as but few tests of the ore have been made.

Utah.

The Salt Lake *Vedette*, Oct. 5, has the following on the Sweetwater mines: Several well-known parties recently arrived from these new mines within the past few days, enables us to furnish our readers with a few more reliable items concerning them. Prospectors continue to arrive almost daily, and houses for winter quarters were rapidly going up—many of the miners having determined to winter in the districts. The Shoshone Ditch company have completed their ditch (a little over four miles in length) and are prepared to ground sluice their claims, which are thought to be extremely rich. New discoveries are continually being made, and some of them very promising. Quite a quantity of rock from the "Miner's Delight Ledge" and extensions, in the California District, has come into town, all of it exhibiting free gold in abundance. Some decomposed quartz rock, in which no gold was visible to the eye, from the "Delight" claims, brought in by Major Gallagher and assayed by Messrs. Bohm & Molitor, gave the following results:

Gold	$804 75
Silver	30.13
Total	$834.13 per ton

Gen. Dodge and Gen. Rawlins paid the district a flying visit, and after examining some of the claims expressed themselves highly pleased with what they saw, declaring it the richest and most extensive mining district they had ever seen.

New Mexico.

The Colorado *Tribune* says: Mr. Samuel Scott arrived from the Cimaron mines Thursday evening. He describes them as being situated in New Mexico, fifteen miles south of the Colorado line and thirty miles west of Maxwell's ranch. They have ditches constructed and under construction, so that in another season there will be no lack of water. Mr. Scott brought up over two hundred ounces of fine gold, the net result of two months' operation.

Canada.

The Madoc *Mercury*, October 19th, says: Our notes this week will be briefer than we anticipated, as Messrs. Scott & Taylor's crushing mill at Eldorado, though now nearly completed, has not yet commenced active operations. Additional specimens of rock, containing gold from the Excelsior mine, which have been obtained within the last day or two, have been exhibited in Madoc; and we hear of other samples having been shown, which have been procured within two miles of the village, though the precise locality is not, for the present, made public. Galena has also been found in the shaft being sunk on Mr. H. Seymour's farm. Another shaft which is being sunk on Mr. F. Seymour's land, a short distance from the marble quarry, has already reached the depth of about twenty feet. .....A very satisfactory assay of ore from the Madoc Gold Mining company of Toronto's claim, on lot 17, in the 7th concession of Madoc, has been made by Mr. Scott, the result showing $270 to the ton.

COPPER.

Michigan.

The Portage Lake *Gazette* has the following touching the demand for labor in its section: An adverse change in the price of copper is too often followed by instructions to the mining superintendent to curtail expenses, and especially to reduce the force opening, while it is often plainly hinted that the stopes may be kept on the best ground. In like manner preparations at surface for providing fuel and other necessaries are relaxed, and, to use an old expression, "no thought is taken of the morrow." After this policy—or want of policy—has been pursued some time, perhaps the price of copper rises several cents per pound, when, as if by one impulse, the Eastern managers of the entire copper region order an immediate increase of force at the works, insisting on immediate increase of production. Unfortunately it has not been taken into account that the previous policy has deprived the agents of the chance of hiring a single individual unless they bid against each other. In this way the wisdom of the Eastern management reacts against their own interest, although too often the party least to blame has to suffer the severest consequences. At present the market is not overstocked with laborers, and we are not surprised to learn that at many places three months' contracts are freely offered in the hope of securing something above a minimum force. The best interests of all interested in mining for copper is served when there is something like regularity and dependence on the force employed, and we trust that hereafter a more far-seeing and enlightened view than has obtained of late will control mining directors in this respect.....From the same paper (October 24) we take the following items: But one head is being run at the Calumet. .....The new set of Collom washers was started at the Pewabic on Monday, doing well.....At the Adams the hoisting engine is in place, and the engine house in a well advanced stage of completion .....The Hancock mine, as a general thing, is looking as well as at any time this season, and the openings indicate that the present rate of production can, with good management, be kept up for an indifinite time. The stamp-mill is in good running order, and the product for this month will probably be between fifty and sixty tons.....The Concord, a young and promising mine, will, it is thought, do even better than was anticipated. The ground still continues to open rich, and it is hunted that the season's product of barrel work will not fall far, if any, short of twenty tons. Quite a large amount of stamp work is on surface that will yield fully six per cent. of mineral.....The locomotive Globe made a trip to the South Pewabic mine on Friday last, with the most satisfactory results to all concerned. There is at present quite a large amount of rock on the surface, and the openings are so well extended that Captain Ryan is confident he can supply the mill with all that will be required to run it up to its full capacity. The amount raised will be limited only to the capacity of the hoisting engine. The rock now being taken out carries full as much shot copper as heretofore. At the mill work is somewhat delayed, owing to the non-arrival of a portion of the pipe to be connected with the pump. .....From the Ontonagon *Miner* (October 19) we copy the following report of the product in that district:

MINE.	Tons.	lbs.
Evergreen Bluff	35	405
Minnesota	31	127
Ridge	29	427
Knowlton	25	678
National mine	23	1227
Superior mine	8	245
Rockland mine	5	716
Total	157	1525

The Houghton *Gazette*, Oct. 10th and 17th, furnishes the subjoined items: Reports from the Central indicate a good run of masses, one having been sent down weighing upwards of five and a-half tons, and many more of smaller size.....The Concord mine is reported to be looking well, with no perceptible diminution of copper. Work was begun hauling the accumulated barrel-work to the smelting-works on Tuesday.....At the Hecla the locomotive and a Worthington pump arrived on the "Meteor" Tuesday evening, and they are now lying on the Quincy dock. The locomotive looks to be about one-third larger than that of the Franklin company .....At the Franklin the mining force has been increased about one hundred men, and the surface force has also been somewhat increased. The new washers in the stamp-mill are expected to be in operation in from ten days to two weeks.....At the Calumet we learn that the mill has been stopped for the past few days for the purpose of putting in the pump bought of the Huron company, and making some slight alterations about the boilers. They were to recommence operations to-day (17th).....Mr. Spalding, agent of the Omiga mine, writes as follows to a business firm of this place concerning the duty of the Omiga stamps during sixteen days in September: "In September, in sixteen days of twenty-four hours each, we stamped and washed three hundred and ninety tons of rock for the Ridge Copper company, or over three tons to each head per twenty-four hours. We ran our heads at an average speed of fifty-five blows per minute, and can run them up to sixty-five or seventy blows per minute. We have not broken a "horn" this summer."..... The South Pewabic stamp-mill is nearly completed, and, in all probability, the machinery will be set in motion by the 1st proximo. The machinery in every department is first-class, and no pains or necessary expense has been spared in putting it together. The workmen are about putting in a pump, which is calculated to supply 2,000 gallons of water per minute. Take it all in all, the South Pewabic mill is the most substantial, and calculated to do the largest amount of work of any other mill on Lake Superior, if not on the continent.....The Ontonagon *Miner*, Oct. 12th, reports concerning the National mine: Under the ninth level, west of No. 3 shaft, where the twenty ton mass was lately taken from, two parties of men are engaged in stoping; it is here that the conglomerate belt was cut through, and the southern part of this cross-cut that now proves so rich in copper. The result of the labors of the men here, are, that the side of a mass of copper is now in view; how large it may prove we are unable at present to determine. The indications are, however, that this will prove much larger than the other. One wing of the twenty ton mass was cut loose from this which is now showing itself. In a few weeks we shall be able to give our readers the results of the work now being prosecuted. East of No. 1 shaft over the tenth level, a mass of six tons or more was blasted out some days ago; men are now engaged in cutting the same, preparatory to shipment. The local middle vein which has always been rich in stamp work, men were engaged in driving; large pieces of sheet copper were exposed. In fact, the end of the drift was full of copper. We also found that in other parts of the mine the conglomerate began to show rich in copper, and we may look for good results. The National propose during the coming winter to continue their present force from thirty-five to forty miners. They intend to continue sinking No. 3 shaft, and connect on the tenth level east and west.

Colorado.

An article in the Central City *Register* of the 15th ult., describing the copper lodes recently discovered in Mountain House district, and the belt running across the heads of Ralston, south a quarter east, reads: About five miles northeast of Black Hawk, in a low and comparatively smooth amphitheatre formed by the fan-like affluents of Ralston creek, occur a group of copper lodes, bearing south a few degrees east as near as I can judge—almost precisely at a right angle with the gold lodes of Gregory. One, called the Arizona, crops out occasionally for half a mile in length, and perhaps 200 feet in width. Four or five shafts have been started on it in different places, in every case showing a solid ledge of flinty quartz in place, from twelve to eighteen inches wide, accompanied on each side to the full width of a common shaft, and how much further no one knows, with vein matter. In speaking of the outcrop I do not mean to say that there is a solid ledge 200 feet wide, but that for that space these hard quartz leaders are occasionally found, and scattered over it are huge blossom rocks with a good deal of copper, chiefly in the form of grey sulphuret, mixed pretty thoroughly with their substance. Half a mile south of the shaft on the Arizona, which is thirty feet deep, is another of about the same depth on what is called the Sturdevant. It follows a strong leader vertically, and ten feet distant on either hand there is another pitching rapidly towards the main lode. They must come together within 100 feet of the surface, and make a vein of ore from four to six feet thick at least. But the workings are yet so slight on this ledge, that no idea can be formed of its power or lineal extent. The gangue is white flinty quartz, carrying a heavy percentage of copper in the form of sulphurets, oxyds, carbonates, &c. At the Buckeye Ranch a hole in sight from the road exposes a ledge in place two feet in width, quartz, bearing minerals of copper and galena, not named nor recorded. A mile north of this is the Abbott, shaft thirty-three feet deep, gangue country-rock, bears copper, galena, and iron, assays fairly, solid leader of vein a foot wide. The Copperhead and Swansea are similar to the Abbott, not so much developed. But there are two lodes about half-way between the Four-Mile House and the Seven-Mile Mountain, or rather one lode going under two names—Ohio and Tennessee—which really promised well. The shaft on the Ohio is forty feet deep, good hanging wall, pitches south one foot in ten, loose crevice of white flinty quartz bearing gold, copper, and galena, five feet in width, vein of dark copper ore at least fifty per cent. copper, six to twelve inches wide coming in on each wall in bottom of shaft. Four hundred yards north is the discovery shaft of the Tennessee, thirty feet deep, strength and underline of crevice the same as in the Ohio shaft, and much more minerals of copper, sulphurets, carbonates and oxyds in proportion. I think there can be no question that there is a solid vein of very rich copper ore two or three feet in width, and at least six hundred yards long, right here, and at no great depth from the surface. There are no other mines of consequence known to exist in the vicinity; there is plenty of wood and water near by, and a wagon can be loaded with ore at the shaft and driven to Denver or Golden City on a down grade. With a railroad from Golden City to the States, this great wealth of copper, together with untold quantities more known to be housed in the Foothills, will be available. The ore can be crushed and concentrated on the ground, and shipped to the States by rail, leaving a large margin of profit. It is not so very far in the future either.

TIN.

Missouri.

Just at the present time the tin excitement is somewhat on the increase, and a large number of strangers are almost daily passing through Ironton, visiting the mines in Madison county. The owners of tin lands are not disposed to sell even at large advances on the price for which they bought their lands, and since the exhibition of the bar of tin metal at the St. Louis Fair, public confidence has greatly increased and tin stock perceptibly advanced. The furnaces so much talked of, have not yet been erected, but we are assured that they will be completed and put in running order as soon as possible. Mining operations are constantly going on, and those engaged in the work are greatly elated over their prospects.—*Ironton Enterprise, Oct. 24.*

MISCELLANEOUS.

Africa.

A Cape of Good Hope letter says that the people living in the neighborhood of Colesburgh are in search for diamonds. A number of these precious stones have already been found, some of them of considerable value. The first diamond was picked up by a little girl at Hopetown. Her father is a laborer on the farm of Mr. Schaik van Nickerck. She took the diamond to her mother, and the latter, thinking it only a pretty stone, returned it to the child to play with. Nickerck happened to see it glitter, and offered to buy it of the girl, but she gave it to him, saying, laughingly, who ever heard of selling a stone. He took it, and it proved to be a diamond worth $2,500. Copper has just been discovered in the colony of Natal. A local paper says: Hitherto the discoveries of copper have been out of the colony and at some distance from port. Griqualand, on the south, and Zululand, on the north, were the nearest localities where mineral wealth was known substantially to exist. It may be remembered that the mines in the first of these places owed their discovery to the rude green paint used by the natives for decorating their faces. The attention of Mr. Shepstone, Secretary for Native Affairs, was attracted by this circumstance to a similar incident noticed by him eighteen years ago within the boundaries of

Natal. In course of time he succeeded in identifying the exact locality, and Mr. Warne, a practical miner of thirty years' experience, has just returned from a nine days' prospecting trip, bringing with him three hundred weight of metalliferous rock, consisting chiefly of carbonate of copper, mixed with quartz and friable clay. These specimens are poor, being from near the surface, but they give every promise of a richer yield beneath. These are taken from a vein eight feet wide, running from northeast to southwest, and probably extending for some distance. Six similar indications have been found at other places. The most important feature of the discovery, however, is its nearness to the coast, the lode not being more than seven miles from the sea, and little more than that distance in the tidal rise of the Umhlanzi, where the river becomes navigable and accessible to small vessels. A township has already been laid out at this little harbor, which is only thirty miles south of Durban. In all probability these mineral indications are but precursors of future discoveries. They occur in a range of hills which runs parallel with the coast from the Amapondaland, through Natal and into Zululand. We know that at the southern extremity copper of fine quality exists. We now find that copper is to be found at a higher point, near the Ilovo. Rumors of similar traces have been spoken of in the Inanda, yet more to the north.

MARKET REVIEW.

Gold and Silver Stocks.—Edgehill sells at the board, regular $1 15; N. Y. & Eldorado, $1 40; Quartz Hill, $3 and $3, $1 25; Rocky Mountain, $3 30; Smith & Farmelee, $1 75; Corydon, $3 50@$3 60.

	Bid.	Asked.		Bid.	Asked.
Alameda Silver	—	1 50	Liberty Gold	—	—
American Hill	60	70	Manhattan	105 00	120 00
Atlantic and Pacific	—	—	Midas Silver	—	2 00
Bates & Baxter Gold	—	1 00	Montana Gold	12	16
Boston Gold	58	70	New York	75	1 00
Bullard Gold	—	3 00	New York & Eldo	1 60	1 70
Caribou Consolidated	—	1 00	Nye Gold	—	—
Consolidated G. & S.	10	12	Owyhee Mining	10 00	20 00
Confederation Silver	20 00	—	People's G. & S. of Cal	—	50
Consolidated Gregory	5 80	5 85	Quartz Hill	1 20	1 25
Corydon Gold	50	55	Reynolds Gold	—	4
Edgehill Mining	4 50	4 40	Rocky Mountain Gold	25	30
Gold Hill	—	4 00	Seaver Gold	—	11 50
Gunnell Gold	1 25	1 75	Smith & Farmelee Gold	3 70	3 75
Gunnell Union	20	35	sensenderfer	—	10 00
Wm. G. & S. Jr.	—	50	Symonds Fork Gold	—	1 00
Harmon G. & S. Jr.	—	11 00	Texas Gold	—	—
Holmes	—	12	Twin Rock Gold	—	—
Hopetoft	10	50	Vandeburg G	—	70
Kopp & Buell Gold	—	10	Yellow Jacket	—	—
La Crosse Gold	20	50			

Copper Stocks. Walk Hotchkiss at 40c. at the board.

	Bid.	Asked.		Bid.	Asked.
Caledonia	—	10 00	Helton	—	1 00
Canada	—	50	Isle Royale	—	6 00
Central	—	25 00	Knowlton	—	1 00
Charter Oak	—	3 00	Mendota	1 00	—
Eagle River	1 10	1 20	Ogima	50	—
Evergreen Bluff	—	5 00	Rockland	1 00	90
Gardner Hill	1 20	1 50			

Petroleum Stocks.

	Bid.	Asked.		Bid.	Asked.
Beaudett Run	$3 50	4 00	National	1 50	3 00
Breyfogle	45	60	N. Y. and Allegheny	2 50	3 00
Buchanan Farm	38	41	Oil Hole Creek	57	65
Bivens	25	—	Rynd Farm	10	12
Central	75	1 00	United Pet. Farms	10	20
Clinton Oil	1 20	1 70	United States	2 00	3 00
Excelsior	5	15	Union	1 75	2 10
Manhattan		10			

Miscellaneous Stocks.—Mariposa Mining, 9c.; Adams Express, 68; Atlantic Mail, 110¼; New York Central, 112; Reading, 97¼; Michigan Southern, 78¾; Fort Wayne, 97; Adams, 35¾; Northwestern pref., 65; Toledo, 86¼; Fort Wayne, 97; Ohio & Mississippi, 24; American Gold, 134; United States Express, 57; Wells, Fargo & Co., 51; 62; Pacific Mail, 120½; Del., L. & W. R.R., 89.

Government Stocks are irregular from the effect of late speculations, but firm, with but few transactions. The foreign orders, though firm in their views, are not large buyers. The continued demand for Treasury requirements and the growing ease in money, continue to promote quotations:

U. S. 6s, 1867, coupon	110 @ —
U. S. 6s, 1868, coupon	— @ 111
U. S. 6s, 1881, regular	111 @ 111
U. S. 6s, 1881, coupon	111 @ 112½
U. S. 6s, 5-20s, 1862, regular	— @ —
U. S. 6s, 5-20s, 1862, coupon	112 @ 112¾
U. S. 6s, 5-20s, 1864, coupon	109 @ 109¾
U. S. 6s, 5-20s, 1865, coupon	110 @ 110¾
U. S. 6s, 5-20s, c. July, 1865	107 @ 107¾
U. S. 6s, 5-20s, July, 1867, coupon	107¾ @ 107¾
U. S. 5s, 1874, reg	117 @ 118
U. S. 5s, 1874, cou	— @ —
U. S. 10-40s, regular	104 @ —
U. S. 10-40s, coupon	106 @ 106¾
U. S. 7-30s, June, small	105½ @ 105¾
U. S. 7-30s, July, small	105½ @ 105¾

Foreign Exchange is dull, but rates are firm. The current business is quite limited, but bankers are remitting freely on account of steamer's sailing on the 30th, for 60 days' sterling, which, however, is not large in figure. The following are the current rates:

London (prime bankers' 60 days)	109 @ 109½
London (prime bankers' sight)	109 @ 110
London (prime commercial)	— @ —
Paris, (bankers') long	5 16@5 15
Paris (bankers') short	5 14@5 13
Antwerp	5 15@5 14
Swiss	5 17@5 16
Hamburg (bankers')	35 @ 36
Amsterdam (bankers')	40 @ 41
Frankfort (bankers')	40 @ 41
Bremen (bankers')	79 @ 79½
Berlin (bankers')	72 @ 72½

Gold 140½.

American silver is in moderate request at 1 per cent. below gold. Mexican dollars are quoted at 102½@103 in gold.

Statement of business at the United States Assay Office at New York, for the months ending Oct. 31, 1867:

DEPOSITS OF GOLD:

Foreign coin	$3,000
Foreign bullion	14,000
United States bullion	631,000
	$648,000 00

DEPOSITS OF SILVER, INCLUDING FEE BASIS:

Foreign coin	$21,500
Foreign bullion	13,000
United States bullion (contained in gold)	7,500
Old coins	400
Montana	803
Lake Superior	1,800
Nevada	200
	$45,000 00
Total deposits payable in bars	$740,000
" " coins	205,000
	$945,000 00
Gold bars stamped	6,040 85
Transmitted to United States Mint, Phila., for coinage	938,148 51

A San Francisco telegram dated Oct. 30th, says: "The steamship Sacramento sailed for Panama to-day with $505,954 in treasure, $486,854 of which was for New York. The total shipments of treasure since Jan. 1, were $34,568,741. The steamship Orillamme, from the Northern Coast, brings $160,000 in treasure."

A Mexican correspondent writes that during the month of September eighty-eight bars of silver were assayed in San Luis Potosi; value, $107 149 87. In July last $131,000 were coined at the Alamos Mint, in Sonora.

Copper has again declined during the past week. There have been quite large transactions, probably in all 700,000 to 800,000 lbs., in many instances on private terms. Baltimore has been sold at 21¾c., Portage Lake, 22¼@22½c., and Detroit at 22½c. To-day there is more demand at these rates.

Tin is entirely nominal, without wholesale transactions. Banca, 26½c.; Straits, 25¾c.; English, 25d.

Spelter.—Entirely nominal; 6½c. gold for Silesian.

Lead.—Without business. Nominal quotations, 6½c. gold for ordinary brands.

Scotch Pig Iron is unsettled and difficult to quote.

Petroleum is dull and heavy. We quote as follows: Crude (40@47 gravity) in bond per gallon, 11@12c.; crude, do., in barrels, 14@15c.; refined, in bond, 17@18c.; prime light straw to white, free of tax, refined, do., do., standard white, 24@25c.; refined naphtha (specific gravity 250 200), residuum, per barrel, $2@2 50.

THE IRON TRADE

NEW YORK, NOV. 1, 1867

Domestic.—The iron market for the week has been very dull. Very little has been done in Pig, the demand and supply being both small. Manufacturers are putting nothing more on the market than what is necessary to fill their engagements. Some are but now discharging the contracts made in early spring. This gives the present character to the American Pig trade. As a consequence, there is no reliance to note this week. We notice a sale of 100 tons of foreign on private terms. The market in rails is very quiet, but we hear of no purchases on account. We notice the sale of 300 tons of old Rails, and one of 50 tons of Railroad Scrap, but not quite as good as it was three months since. Spikes are quiet and unchanged. Bolts and Nuts are in fair demand, and prices are firm. Horse Shoe Iron is in good demand, and prices are firm. Nail Rods are in fair demand, and prices are firm. Boiler Plate is in fair demand, and prices are firm. Sheet Iron is in fair demand, and prices are firm. Hoop Iron is in fair demand, and prices are firm. Cast Steel is in fair demand, and prices are firm. Spring Steel is in fair demand, and prices are firm. Tire Steel is in fair demand, and prices are firm. Toe Calk Steel is in fair demand, and prices are firm. Sleigh Shoe Steel is in fair demand, and prices are firm. Iron Wire is in fair demand, and prices are firm.

Foreign. The general condition of the Iron Trade in Great Britain is better than it was three months since, but not quite as good as it was three years ago. This is an effect of outside collateral influences, which has checked foreign orders, and, in some instances, caused those heavy stocks to accumulate, but the clearing efforts of the increasing home trade still continue to operate, and show that in a short time there will be little foreign iron produced for exportation. Pigs, for which large orders have been received from this country, are in all parts ready, and prices are firmer.

WEEKLY STATEMENT OF NEW YORK IMPORTS.

The following table shows the quantity and value of iron imported at the New York Custom House, for the week ending and including October 25, 1867:

	QUANTITY	VALUE.
Iron, Pig, tons	45	$1 806
Iron, Bar, tons	670	19 500
Iron, R. R., tons	6,750	53,000
Iron, Sheet, tons	10	532
Iron, Tubes		
Iron, other	2901	57,902
		134,339

Marquette, Michigan, Iron Trade.

The following are the receipts of ore and pig iron at Marquette up to, and including Saturday, October 19, 1867, by the Marquette & Ontonagon Railroad:

ORE.

	Week.	Total.
Pitts. & L. Sup. Iron Co.	802	50,482
Edwards's Mine	504	4,402
Cleveland Iron Co.	774	54,880
Marquette Iron Co.	240	5,410
Lake Sup. Iron Co.	2,547	101,511
New England Iron Co.	255	8,829
Washington Iron Co.	168	21,858
Jackson Iron Co.		139
Ore to local furnace	1,280	22,871
Total iron ore	7,315	293,495

PIG IRON.

	Week.	Total.
Morgan Iron Co.	292	4,892
Greenwood Iron Co.	196	4,088
Ramsdell Iron Co.	64	2,493
Wallace Iron Co.	90	2,004
Machinery Iron Co.	45	1,901
Iron Cliffs Co.		97
Total, pig iron	593	295,956
Total Ore and Pig	7,908	289,820

BOSTON IMPORTS OF PIG IRON FROM JAN. 1st TO OCT. 26th, 1867.

	1867.	1866.
From Great Britain, tons	29,021	18,174
" British Provinces	5,062	11,966

SAN FRANCISCO IMPORTS OF IRON

From January 1 to September 30, inclusive:

Iron Bar—		Various packages	780
Sheet, Iron	72,424	Pipe, Bundles	8,500
" Nail Rod	196,410	" tons	18,962
Steel, Spring	28,718	Pig, American, tons	743
" Cast	921	Scotch, tons	4,166
" Other	3,069	Tubes, bundles	1,462
Plate	20,184	" boxes	134
Hoop	2,966	Railroad Iron	62,956
Horse Shoe	15,162	Rails, tons	143
Nail	280	Total tons	202

SAN FRANCISCO IMPORTS OF IRON

The following table gives the imports of Iron at San Francisco from September 27 to October 8, 1867, inclusive:

Cast, bundles	134	Bar, do	7,164
" boxes	40	Plate, do	242
Railroad Iron	25,429	Bar, bundles	5,674
Sheet, do	1,000	" boxes	100
Nail Rods, do	173	Sheet, bundles	1,768
Horse Shoe Iron, do	100	" boxes	250
Nails, kegs	50	" cases	50
Pipe, bundles	547	Hoop, cases	50

Shipments of Iron to the United States from Liverpool

The following are the shipments of iron to the United States from the port of Liverpool, for the week ending 31st inst.:

For New York, Tons.—Boston 502, New York 466, San Francisco 55.

Iron, Sheet, Iron.—Boston 50, New York 40.

Iron, Rail, Iron.—Boston 205, New York 605, San Francisco 20.

Iron, Plate, Iron.—New York 18.

Iron, Bar, Iron.—New York 47, Philadelphia 110, Portland 100.

Iron, Nails, Tons.—New York 78.

Iron, Railroad, Iron.—Boston 117, New York 196, San Francisco 6.

Iron, Wire, Iron.—New York 2.

Market Prices.

NEW YORK, NOV. 7, 1867

IRON.—Bars, 1 to 1¼c. per lb.; railroad, 4@5c. per 100 lbs.; boiler and plate, 1¼c. per lb.; sheet, hoop, and scroll, 1¼ to 1¾c. per lb.; pig, $50 per ton; common sheet, 3c. per lb. Payable in gold.

Anthracite, No. 1, best	$44 00	45 00	
" 2d quality	40 00	41 00	
Gray Forge	35 00	38 00	
Scotch, pig, from Glasgow	40 00	41 00	
Charcoal, pig, best	50 00	60 00	
Charcoal, pig, ordinary	40 00	45 00	
Bar, Swedes, assorted sizes		4 50	
" Russia		44	
" Common		3 50	
" Refined		4 00	
" Scrap		3 50	
Rods, Swedes, assorted		4 50	
" Russia		44	
Sheet, Russia, per lb		20	
" Common		12	
Boiler Plate		4 00	
Nail Rod		4 00	
Horse Shoe Iron		4 00	
Hoop		4 00	
Spring Steel		12	
Cast Steel, English, per lb		20	
" American		15	
Blister Steel		10	
Tire Steel		8	
Toe Calk Steel		8	
Sleigh Shoe Steel		6	
Iron Wire, No. 6		6	
" No. 8		7	
" No. 10		8	
" No. 12		9	
" No. 14		10	
" No. 16		11	
" No. 18		12	
" No. 20		13	
" No. 22		14	
" No. 24		15	
" No. 26		16	
" No. 28		17	
" No. 30		18	

COPPER.

Ingots, per lb	30	32	
Sheathing, per lb	32	34	
Bolts, per lb	32	34	
Yellow Metal, per lb	30	32	
Pig, per lb	30	32	

TIN.

Pig, per lb	25	26	
Bar, per lb	30	32	
Block, per lb	30	32	
Plate, per box	12 00	14 00	
Plate, per lb	25	26	

LEAD.

Pig, per 100 lbs	$6 50	7 00	
Sheet, per lb	9	10	
Pipe, per lb	10	11	
Shot, per 100 lbs	8 50	9 00	

SPELTER.

Pig, per lb	6	6½	
Sheet, per lb	8	9	

COAL.

Anthracite, per ton	$6 00	8 00	
Bituminous, per ton	5 00	6 00	
Cannel, per ton	8 00	10 00	
Liverpool, per ton	8 00	10 00	
Scotch, per ton	8 00	10 00	
Welsh, per ton	8 00	10 00	

Iron Items

The amount of black band iron ore shipped over the Mill Creek Railroad, for the week ending Oct. 19, 1867, was 136 17 tons; previous, 2,638 14 tons; total 2,775 11 tons.

We were shown one day last week a very fine specimen of Charcoal Pig, made in the vicinity of Portland, on the Willamette river, Oregon. It is No. 1 foundry, from hematite ores. This specimen is all the more interesting as it is the first product of the first furnace on that side of our continent.

The following items tell the condition of the Marquette, Mich., furnaces: The Champion Furnace will probably "blow in" on the 28th inst. Reports from the Morgan Furnace show a manufacture of pig iron, during the past week, of one hundred and fourteen tons. One hundred and eleven tons of pig iron were made at the Greenwood last week. The Michigan Furnace is in active blast and produced last week about one hundred and ten tons of pig iron. The total product of the Cleveland mine for the season to the 26th ult. is 71,000 tons, which will be increased probably to 80,000 tons before the close of navigation. One half of the amount named, as has already been stated, is shipped by way of Escanaba, and the other half by way of Marquette.

New discoveries are constantly being made in the Lake Superior district, and some of the new openings are being rapidly developed into good, durable mines. That south of the school-house promises well as does also the one east of Little Mountain. In grading for the side track, intended to give the Bay de Noc road a connection with the lower level, the workmen came upon a deposit of excellent ore, just north of the county road, and near the school-house. The discovery was wholly unexpected, but none the less rich and valuable, on that account. A new engine for hoisting from a shaft in No. 4, is on the ground, and will soon be put at work. This shaft, now 30 feet down, affords a working face of 25 feet, and with the aid of an engine can be worked to an excellent advantage. A new shaft is also going down in the Marquette mine, in which work is progressing satisfactory. The machinery is now pumping two mines, and hoisting from the principal shaft. The "Jeff" will be put in this winter, when we may expect to see these two mines worked to the best possible advantage. A new saw mill is on the way and will be set up immediately on the low ground west of Little Mountain. The company have about 100,000 feet of logs, and design getting out at least half a million during the winter. Shipments from the Cleveland for the season, thus far, reach about 70,000 tons.

THE COAL TRADE.

NEW YORK, NOV. 1, 1867

The market this week is more lively in all branches, the result of the auction sale having seemingly been beneficial. There is now a better demand for every thing, the preference being in favor of the common sizes. A portion of the past week's unusual demand for the smaller sizes is owing to an anticipation of a rise in freights, which, however, is only speculative. The demand for stove and egg is much in excess of the supply. Neither prices nor freights exhibit much variation.

The auction sale of the Delaware, Lackawana & Western Railroad Company, on last Wednesday was quite successful. The attendance was large, and the bidding very spirited. An advance, as we predicted, was easily obtained in steamboat, broken, egg and stove. There was no change in lump and chestnut.

The following are the prices obtained, with a comparison of the sale last month:

	Oct. 30th, 50,000		Sept. 25th, 75,000	
EGG.	2,000 tons		14,000 tons	
	100 tons	$3 87½	1,000 tons	$3 90
	4,200 tons	3 80	800 tons	3 85
	2,000 tons	3 77½	4,200 tons	3 80
	1,700 tons	3 67½	400 tons	3 75
	1,000 tons	3 65	2,800 tons	3 72½
			750 tons	3 62½
			2,300 tons	3 60
			500 tons	3 57½
			5,000 tons	3 55
STEAMBOAT	10,000 tons		12,000 tons	
	2,100 tons	$3 97½	800 tons	$3 87½
	500 tons	3 92½	800 tons	3 85
	6,950 tons	3 90	2,500 tons	3 82½
			1,200 tons	3 80
			1,000 tons	3 77½
			5,000 tons	3 75
BROKEN.	9,000 tons		15,000 tons	
	500 tons	$4 45	2,300 tons	$4 60
	400 tons	4 40	2,150 tons	4 97½
	200 tons	4 32½	2,100 tons	3 95
	100 tons	4 30	1,450 tons	3 92½
	4,500 tons	4 25	900 tons	3 90
	2,300 tons	4 22½	2,600 tons	3 87½
			2,000 tons	3 85
EGG.	7,000 tons		6,000 tons	
	3,000 tons	$4 67½	300 tons	$4 60
			1,200 tons	4 35
			4,500 tons	4 40
STOVE.	10,000 tons		17,000 tons	
	2,500 tons	$5 50	3,350 tons	$4 75
	300 tons	5 85	2,950 tons	4 72½
	4,450 tons	5 30	3,450 tons	4 70
	1,500 tons	5 25	1,500 tons	4 67½
	750 tons	5 15	300 tons	4 62½
			5,250 tons	4 55
CHESTNUT.	7,000 tons		11,000 tons	
	200 tons	$4 62½	900 tons	$4 15
	400 tons	4 60	1,250 tons	4 00
	1,200 tons	3 97½	200 tons	3 95
	500 tons	3 95	500 tons	3 90
	1,800 tons	3 90	1,400 tons	3 87½
	400 tons	3 85	800 tons	3 85
	3,000 tons	3 82½	600 tons	3 82½
			5,150 tons	3 80

The following lots were also sold, to be delivered at Washington, N. J.:

500 tons grate	$2 30	@	2 50
500 tons egg	2 90	@	3 10
2,500 tons stove	3 27½	@	3 37½
1,000 tons nut	2 60	@	2 65

This coal was sold subject to our corrected freights from Washington, which are guaranteed only until December 1st.

The following table shows the quantity of Coal shipped over the principal roads for the week ending October 26th, 1867, compared with that shipped the same time last year:

	1866.		1867.		
	WEEK.	TOTAL.	WEEK.	TOTAL.	DECREASE.
Phil. & Reading R.R.	70,240	3,171,737	79,186	2,811,672	359,065
Schuylkill Canal	32,115	1,134,480	33,923	805,433	269,050
Lehigh Val. R. R.	36,077	1,567,620	41,183	1,697,075	.....
Lehigh Canal	56,191	908,155	54,672	853,045	.....
Del. & Hudson	28,148	1,129,544	37,658	1,151,628	22,084
Union Coal Co. Rail.	148	2,484	41	7,931	5,497
" " Canal	.....	1,258	2,800	29,967	28,709
Scranton North	9,590	352,809	14,585	394,561	41,611
Scranton south	23,705	884,929	20,154	1,034,316	149,387
Penn'a Coal Co. Rail	17,982	568,576	20,575	660,616	92,041
" " Canal	948	29,413	686	19,072	9,041
Wyoming North	.....	87,721	.....	35,193	52,528
Wyoming South	12,551	407,760	12,800	302,841	104,868
Shamokin	11,458	467,071	10,961	395,526	71,845
Trevorton	495	14,850	1,573	14,453	377
Short Mountain	3,026	83,059	3,664	63,670	19,389
L. V. Co	.....	62,747	2,257	54,692	21,945
Read Top	.....	229,915	5,715	195,429	34,486
Williamston	.....	53,303	.....	97,291	43,788
Total	282,234	10,950,705	322,390	10,729,457	.....
1867	.....	10,729,457	.....	.....	.....
Decrease	.....	221,536	.....	.....	.....

Lehigh and Mahanoy Coal Trade,

For week ending Oct. 26, 1867.

NAMES OF SHIPPERS.	WEEK.	TOTAL.
Treadwell Coal Co.	57 14	1,794 02
Mount Etna	531 04	4,223 19
Mahanoy Coal Co.	648 01	12,663 06
Delano Colliery	.....	35,061 02
Glendon Coal Co.	529 02	14,773 10
Rathburn, Stearns & Co.	.....	25,431 01
Rathburn, Stearns & Co.	2,251 11	91,508 02
E. S. Silliman	2,414 16	86,595,14
McNeal Coal & Iron Co.	1,578 04	47,065 15
Knickerbocker Coal Co	1,194 05	28,808 03
Thomas Coal Co.	201 03	10,382 16
Williams & Herring	.....	4,202 06
Shamokin Valley Coal Co.	765 12	23,625 09
New Boston	232 14	744 18
Caledonia	5 13	42 10
Other shippers		
Total	10,155 05	386,720 04
Corresponding week last year	5,530 03	293,012 13
Increase	4,625 02	93,707 11
Decrease	.....	.....

Schuylkill Coal Trade.

BY RAILROAD & CANAL, FOR WEEK ENDING OCT. 31, 1867.

	Railroad.	Canal.
St. Clair	4,531	.....
Port Carbon	9,574	.....
Pottsville	631	.....
Schuylkill Haven	22,686	.....
Auburn	4,591	.....
Port Clinton	7,573	.....
Total for week	79,186	32,923
Previously this year	2,732,486	831,510
Total	2,811,672	865,433

Lehigh Coal Trade.

SHIPPED FOR THE WEEK ENDING OCTOBER 26, 1867.

SHIPPERS.	CANAL. Week. Tons.	CANAL. Total. Tons.	RAILROAD. Week Tons.	RAILROAD. Total Tons.
FROM MAUCH CHUNK.				
Lehigh Coal & Navigat'n Co	....	....	....	....
Summit Mines	13,450	304,577	....	....
Room Run Mines	....	1,313	....	....
John Laubach & Co	....	352	....	....
Other Shippers	....	....	....	....
Total	13,450	306,243	....	....
FROM B. M. REGION.				
John Connery	....	....	....	1,534
W. T. Carter & Co. (Coleraine)	735	11,704	1,004	74,631
Spring Mountain Coal Co	698	6,125	1,882	113,506
Thomas Hunt & Co. (N. Y. & Lehigh Co)	380	10,785	1,396	85,486
Honey Brook Coal Co	2,436	37,176	1,814	114,109
German Pennsylvania Coal Co	454	8,930	1,089	33,240
Beaver Meadow (D. W.)	....	....	56	1,619
Other Shippers	....	....	6	181
Total	4,614	74,722	7,229	424,400
FROM MAHANOY REGION.				
McNeal Coal and Iron Co	192	4,645	1,924	81,620
Knickerbocker Anthr. Coal Co	87	1,582	964	45,159
North Mahanoy Mines (Mahanoy Col. now P. & C.)	189	1,336	496	12,323
Delano do	....	1,140	....	35,872
Primrose Mines (Ruthbun, Stearns & Co.)	....	....	....	23,625
Walter, Brothers & Co. (now Bedford & Cox)	....	52	....	....
Mount Etna Coal Co	672	2,629	69	1,540
Trenton Coal Co	....	184	....	1,909
Glendon Coal Co. (Glendon Colliery)	....	95	469	14,748
Thomas Coal Co	....	1,677	984	27,215
Williams & Herring	....	189	128	10,130
E. S. Silliman	....	....	1,972	89,743
East Boston	....	....	....	505
New Boston Coal Co	....	....	704	23,565
Shamokin Coal Co	....	....	....	4,20[illegible]
Caledonia M. & M	....	....	202	744
Other Shippers	....	....	....	116
Total	1,141	13,562	7,948	372,702
FROM HAZLETON REGION.				
A. Pardee & Co. (Hazleton)	1,720	64,003	4,456	119,108
G. B. Markle & Co. (Jeddo)	2,253	46,236	1,874	101,261
Wm. S. Halsey & Co. (Mt. Pleasant)	354	4,560	512	9,086
Buck Mountain Coal Co	1,400	30,750	1,303	47,916
Sharpe, Weiss & Co. (Council Ridge)	856	29,254	1,922	64,834
Coxe, Brothers & Co. (Cross Creek)	566	10,414	577	16,308
Ebervale Coal Co	901	31,619	1,518	55,384
Stout Coal Co	727	18,784	617	27,081
Harleigh Coal Co	858	19,808	1,469	35,023
Ashburton Coal Co	....	1,582	....	432
East Sugar Loaf	....	....	3,366	120,370
Upper Lehigh C. Co	529	12,765	1,545	45,127
Highland	454	13,718	1,017	19,508
Mount Hall	91	180	57	986
Woodside	229	585	176	1,455
Latimer	....	246	359	2,309
Other Shippers	....	....	....	10
Total	10,948	290,469	21,072	[667,565]
FROM WYOMING REGION.				
Newport Coal Co	....	3,593	....	783
Warrior Run Mining Co	....	2,056	418	10,538
Parish & Thomas	461	10,765	801	37,462
New Jersey Coal Co	191	7,280	202	14,128
Lehigh & Susquehanna Coal Co	....	2,933	....	11,245
Germania Coal Co	65	7,473	98	11,999
Franklin Coal Co	....	5,507	....	8,763
Audenried Impr'v't & Coal Co	373	7,754	....	17,788
Valley Coal Co	....	189	....	384
Wilkes Barre Coal and Iron Co	2,245	69,958	1,665	52,615
Baltimore Coal Co	426	15,398	29	30,186
Union Coal Co	....	5,325	41	7,931
Wyoming Coal & Transp'n Co	....	6,980	105	17,770
Everhart Coal Co	....	2,618	....	1,904
Morris & Essex Mutual	....	....	265	7,182
H. B. Hillman & Co	....	....	56	7,029
Bowkley, Price & Co	....	....	....	1,745
T. F. Hunt & Co	....	....	....	774
John Horton	94	475	....	....
Mineral Springs	....	....	60	4,501
Consumers	....	....	182	746
Plymouth Coal Co	....	....	977	4,117
Enterprise Colliery, J. H. Swoyer	....	....	108	987
Washington Coal Co	....	....	25	724
West Pittston	....	....	....	50
Other Shippers	662	10,121	....	....
Total	4,517	158,378	4,965	241,133
Grand Total	34,672	843,368	41,224	1,705,006
Total 1866	36,191	908,155	36,077	1,567,620
Decrease	1,519	64,787	....	....
Increase	....	....	5,147	137,385

COAL PRODUCTION OF CALIFORNIA MINES.

The receipts of coal from the Monte Diablo (California) mines, for [nine months of 1866 and 1867, respectively, were as follows:

Number of tons, nine months, 1866	58,299
Number of tons, nine months, 1867	67,791
Increase number of tons, nine months, 1867	93,940

The aggregate imports and receipts from all sources for the nine months ending September 30th 1866 and 1886 respectively, were as follows:

	1866.	1867.
Number of tons	163,774.	182,054
		163,774
Increase nine months, 1867		18,280

Prices of Coal by the Cargo.

[CORRECTED WEEKLY.]

At New York, November 1, 1867.

Schuylkill R. A., choice	$5 75@	$6 00	Lehigh Broken	5 12 ....
" Ordinary	5 25	5 50	" Egg	5 12 ....
" W. A. Lump	5 25	5 50	" Stove	5 20 ....
" Steamboat	5 25	5 50	" Chestnut	4 20 ....
" Broken	5 25	5 50	Wilkesbarre Lump	5 25 ....
" Egg	5 25	5 50	" B'ken & Egg	5 25 ....
" Stove	5 25	5 50	" Stove	5 50 ....
" Chestnut	4 00	4 25	" Chestnut	4 75 ....
Lehigh White Ash Lump	5 37	...		

SPECIAL COALS.—DEALERS' QUOTATIONS.

Diam'd Vein R. A., Sch'kill	....	....	New England Red Ash	$5 25 ....
Locust Dale W. A., "	....	....	Broad Mountain	5 25 ....
Honey Brook " Lehigh	5 50	....	Wyoming	5 00 ....
Harleigh " "	5 50	....	McNeal Co.	5 50 ....
Spring M'n " "	5 50	....	George's Creek (Balt.)	5 25 ....
Sugar Creek " "	5 50	....	" " (George'n)	4 75 ....
Ashburton " "	5 50	....	Locust Mount'n (Repplier)	5 50 ....
Fulton White Ash	5 50	....	Duncan Red Ash "	6 00 ....
Stout	5 50	....	Wharre Coal & Iron Co	5 25 ....
Old Co's "	5 50	....	New Burgh Orrell Gas Coal	9 00 ....
Buck Ridge W. A., Sh'kin	5 00	....	Despard Gas Coal	9 00 ....
H. Heds. E. S'kin. Lorb	5 50	....		

Dealers in these Coals may be found in our advertising columns

At Philadelphia, November 1, 1867.

Lehigh Lump and St'mb't	$5 00@	....	Schuylkill Chestnut	2 75 ....
" Broken and Egg	5 00	....	Locust Mount Lump and	
" Stove	5 00	....	Steamboat	4 25 ....
" Chestnut	3 75	....	" Broken	4 25 ....
Schuylkill R. A. Prepared	4 25	4 50	" Prepared	4 25 ....
" Chestnut	2 75	....	" Chestnut	2 87 ....
" W. A. Lump and Steamboat	4 25	....	Lorberry Coal	4 25 ....
" Broken	4 25	....	Shamokin	4 75 ....
" Egg and Stove	4 25	....	Franklin, (Lykens Valley)	4 75 ....
			Broad Top	4 75 ....

Scranton Coal at Elizabethport, November 1, 1867.

(Corrected weekly by D. L. & W. R. R. Co.)

Lump	$4 25@	....	Egg	5 00 ....
Steamer	4 50	....	Stove	5 50 ....
Grate	4 75	....	Chestnut	4 40 ....

Prices for Pittston Coal at Newburgh, October 25, 1867.

(Corrected weekly by Penna. Coal Co.)

Lump, per ton of 2240 lbs.	$4 70@	....	Egg " " "	4 70 ....
Steamer, " " "	4 70	....	Stove " " "	4 90 ....
Grate " " "	4 70	....	Chestnut " " "	4 20 ....

70 cents additional to New York.

Lackawanna at Rondout, November 1, 1867.

(Average contract prices for year.)

Lump	$4 90@	....	Stove	5 45@ ....
Steamer	5 00@	....	Chestnut	4 50@ ....
Grate	5 20@	....	Pea	4 20@ ....
Egg	5 50@	....		

Lehigh Coal at Elizabethport, November 1, 1867.

Lump	5 50@	....	Chestnut	4 50 ....
Steamboat and Broken	5 25	....	Stove	5 50 ....
Egg	5 25	....		

At Baltimore, November 1, 1867.

Wilkesbarre & Pittston W. A. by cargo or car	$5 25@	5 50	From wharf or yard, 5c. to $1 per ton additional.	
Lykens Valley R. A. by cargo or car	5 50@	5 80	Retail, del'd, per 2,240 lbs	7 00@7 50
Sunbury & Shamokin R. or W. A. by cargo	5 00	5 55	George's C'k and Cumberland f. o. b. at Locust P't	5 00@....

At Havre de Grace, Md.

Wilkesbarre or Pittston W. A., on board	$4 85@	5 10	Sunbury or Shamokin, R. or W. A., on board	5 00@5 10
			Lykens V'y, R. A. on b'd	5 10@5 25

At Georgetown, D. C.

George's Creek and Cumberland, on board ..... $4 25@ 4 50

Wilkesbarre Coal at Elizabethport, November 1, 1867

(Corrected by Wilkesbarre Coal & Iron Co.)

Lump	$4 50	....	Egg	4 75 ....
Steamer	4 50	....	Stove	5 00 ....
Broken	4 75	....	Chestnut	4 50 ....

Ten cents additional on shipments from Jersey City

Prices of Provincial Coals.

[CORRECTED WEEKLY BY LOUIS J. BELLONI, JR., 43 PINE STREET.]

Duty $1.25 per ton.

Block House (on board)	$2 00	gold	Little Glace Bay	1 87½ "
Gowrie "	1 75	"	International Co's	1 75 "
Lingan "	1 75	"	Slack Coal, B. H.	75 "
Sydney "	2 25	"	" L. G. B.	1 00 "
Picton "	2 25	"		

Prices of Foreign Coals.

Duty $1.25 per ton.

Corrected weekly by PARMELEE BROS., 32 Pine Street, N. Y.

Liverpool Gas Caking	$10 00		Liverpool House Cannel	19 00@20 00
" " Cannel	13 50		" " Orrel	16 00@18 00

Per ton 2240 lbs., Ex. ship.

PRICES FROM YARD

Liverpool Orrel, screened	$15@20		Liverpool Cannel, scr'd	20 00@22 00

per ton 2000 lbs. delivered.

Coal Freights.

(Corrected Weekly.)

From Newburgh.

RIVER.	Co.'s Boats		EASTERN.	
Albany	60@	....	Boston	1 75@ ....
Barrytown	25	....	Bridgeport	1 12½ ....
Catskill	35	....	Bristol	1 50 ....
Cold Spring	20	....	Dighton	1 50 ....
Coeymans	45	....	Fall River	1 45 ....
Coxsackie	40	....	Mystic	1 50 ....
Fishkill Landing	20	....	New Haven	1 12½ ....
Greenbush	50	....	New London	1 25 ....
Haverstraw	45	....	Newport	1 45 ....
Hudson	35	....	Norwalk	1 12½ ....
New York	70	....	Norwich	1 40 ....
Nyack	50	....	Pawtucket	1 65 ....
Peekskill	40	....	Providence	1 50 ....
Poughkeepsie	25	....	Stamford	1 12½ ....
Rhinebeck	30	....	Stonington	1 25 ....
Saugerties	35	....	Warren	1 45 ....
Sing Sing	50	....		
Stuyvesant	40	....		
Tarrytown	50	....		
Troy	55	....		
West Point	30	....		
West Troy	55	....		
Yonkers	50	....		

From Rondout.

Boston	$1 95	New London	1 40
Bridgeport	1 25	Newport	1 60
Bristol	1 60	Norwalk	1 25
Dighton	1 55	Pawtucket	1 70
Fall River	1 60	Providence	1 60
Mystic	1 40	Stamford	1 25
New Haven	1 25	Stonington	1 40
Norwich	1 50		

From Elizabethport.

Albany	$ 75@	— —	New London	1 25@— —
Boston	1 75	— —	Newport	1 40 — —
Bridgeport	1 00	— —	New York	55 60
Fall River	1 40	— —	Norwalk	1 00 — —
Hartford	1 50	— —	Norwich	1 30 — —
Hudson	1 00	— —	Pawtucket and towing	1 50 — —
Lynn	—	— —	Portland	1 60 — —
Middletown	1 25	— —	Portsmouth	2 15 — —
New Bedford	1 45	— —	Providence	1 40 — —
Newburyport	2 00	— —	Salem	1 80 — —
New Haven	1 00	— —	Taunton	1 40 — —

From Baltimore.

To Philadelphia	$1 30@	— —	Boston	2 25@2 50
New York	2 10	— —	Sound Ports	2 25@2 50
Washington	1 10	— —	Norfolk	1 00@— —
Annapolis	75	— —	Richmond	1 50@— —

From Washington, N. J.

Hackettstown	$ 58	Iron Dale	$ 1 12
Waterloo	81	Dover	1 24
Stanhope	90	Paterson	1 80
Port Morris	90	Pompton	1 80
Rockaway	1 02	Bloomfield	1 80
Denville	1 33	Newark	2 10
Boonton	1 44	Belleville	2 10
Little Falls	1 76	Communipaw	2 10
Drakesville	1 08	Jersey City	2 20
Dickerson's Basin	1 11	New York	2 20

From Port Richmond. Philadelphia.

Amesbury Point	2 65	— —	Mobile	2 25 — —
Albany	1 40	— —	New York	1 30 — —
Boston	2 20	2 25	Newport	1 75 — —
" bridges	63	— —	New Haven	1 75 — —
Chelsea	2 25	— —	Norwich	1 75 — —
Charlestown	2 20	— —	Providence	1 75 — —
Danversport	2 25	— —	Portsmouth	2 40 — —
Fall River	1 75	— —	Roxbury	2 45 — —
Galveston, Texas	5 00	— —	Salem	2 25 — —
Lynn and dis	2 35	— —	Wareham	2 15 — —

From Georgetown or Alexandria.

To Philadelphia	$1 50	— —	Boston	2 75 2 50
New York	2 15	— —	Sound Ports	2 25 2 50

Provincial Freights.

Currency.

Sydney to N. Y	$2 75
Sydney to Boston	2 75
Lingan	3 50
Lingan to Boston	3 00
Cow Bay	2 75
Cow Bay to Boston	2 75
Cow Bay to Portland	2 50
Big Glace Bay	3 87
Little "	2 50

Foreign Freights.

New Castle and Ports on Tyne	£17@ keel.
Liverpool	15s @17s 6d

Rates of Transportation to Tide Water, June 1, 1867.

PHILADELPHIA & READING RAILROAD.

From Pottsville to Philadelphia	$2 17
" " Port Richmond	2 07
" " New York, drawback off	2 80

SCHUYLKILL NAVIGATION.

From Pottsville to Philadelphia	1 08
" " New York, drawback off	2 88

Wyoming Valley Canal.

	Tolls.	Freights.
From Wilkesbarre to Havre de Grace	97c.	$1 55
" " Columbia	60	1 20
" " Middletown	67	1 10
" " Harrisburg	65½	1 05

OTHER AVENUES.

From Mauch Chunk to Philadelphia, Canal, including unloading	1 88
" " Philadelphia, via North Penna Railroad	2 00
" " Elizabethport, via N. J. Central Railroad	2 05
" " Port Johnson	2 10
" " New York	2 47
" " New York via Del. Div. and Raritan Canal, including unloading	2 67
" " New York via Morris Canal	2 39
" " Hoboken via Morris & Essex Railroad	2 10
" " New York	2 29
From Elizabethport to Buffalo, via New York Canal, a distance of about 450 miles—freight, $2 62; toll 78 cents	3 40

The shipping expenses at Elizabethport and Port Johnson vary from 2½ to 30 cents.

BOSTON STOCK MARKET.

Prices of mining stocks bid this day were as follows:

BOSTON, October 31, 1867.

Allouez	4⅜	Huron	—
Calumet	—	Isle Royal	—
Hecla	36	Minnesota	—
Canada	—	Quincy	20
Copper Falls	25½	Cary Improvement	7½
Franklin	15	Rockland	—
Hancock	—	Boston Water Power	17½

Sales at Boston Stock Exchange, October 23.

100 shares Copper Falls	25½	FIRST CALL.	SECOND CALL.		
100 do	b.30..	25	300 shares Water Power		17½
50 do Cary Imp		7½	200 do	do	b.30.. 17¾
100 do	do	b.60..	7¾	50 do Cary Imp	b.60.. 7¾
100 do Allouez		4¾	100 do Hancock		b.30.. 11⅞
100 do Humboldt		1½			

San Francisco Prices of Copper Ores.

SAN FRANCISCO, Sept. 28, 1867.

We give the following as an approximate price at which copper ores can now be sold in this city. There is no sale for ores which assay less than 12 per cent. The late reduction in price is on account of the advance of freight:

12	per cent. ore	$16 00	22	per cent. ore	$13 56
13	" "	18 62	23	" "	46 45
14	" "	20 20	24	" "	49 33
15	" "	23 75	25	" "	52 22
16	" "	16 23	26	" "	55 11
17	" "	29 12	27	" "	58 00
18	" "	29 04	28	" "	68 80
19	" "	34 90	29	" "	63 77
20	" "	37 78	30	" "	66 66
21	" "	40 67	31	" "	69 55

These prices, we believe, will be found substantially correct, and can be realized at this date.—*Mining Press.*

Mining in the Hartz Mountains.

A most stupendous work in mining engineering was some time since completed at the Silver Mines, Hartz Mountain, Germany. The scarcity of fuel, coal especially, prevented at these deep mines the profitable introduction of steam engines for pumping, etc.; but, with an excellent system of races and reservoirs, the water was got rid of by water-wheels and turbines. The mines having reached a depth of over 3,200 feet, adits were from time to time driven, to lessen the labor of the machinery; but at last a point was reached which threatened the total suspension of the works, and, consequently, the starvation of nearly 2,500 miners and smelters. Surveys were made and a tunnel commenced in 1859, for the purpose of making the last effort for draining the mines still deeper. This tunnel is now completed, and has satisfied all expectations. Though twenty-two English miles long, ten feet high, and eight wide, with a rubble arch overhead, so exact were the surveys that in the eighteen ends (one mile from each other) the bearings were out of reckoning but five inches for the whole length, and that was occasioned by a stong lode of iron ore disturbing the surveyor's instruments. Two million cubic yards of solid rock were displaced; 10,000 lbs. of powder used, and if the holes for blasting were put in one line, 180 miles would be their aggregate length. Great rejoicing took place after. A solemn thanksgiving in the Lutheran churches; a torchlight procession of over 30,000 miners, in full gala uniform, and headed by sixteen bands of music, who moved through the chief mining towns at night, in order to receive the distinctions, presents, etc., distributed by the Mining Minister of the district. It is now certain that with these appliances the mines can be carried on to the year 1887, and as there is no deeper adit possible, steam engines will then have to be brought into requisition. These mines were first commenced to be worked in the year 926, and have been productive ever since.

Electric Light.

An exhibition of the working of a new method for producing light by means of electricity, the invention of Prof. NOLLET, of Paris, was made at the Battery, in this city, on Tuesday evening. The illuminating apparatus having been placed on the roof of the Barge Office, it gave a very clear and penetrating light to a great distance. So strong was the light that the captain of one of the revenue cutters informed the company that he had read his newspaper by it at the distance of nearly six miles, and at the Narrows the ordinary gas light displayed from the tower of the Barge Office was entirely lost sight of in the greater brilliancy of its new rival. The apparatus for producing electricity is quite simple, consisting of several series of horse-shoe magnets—fifty-eight magnets in all—arranged in a cylindrical form in a frame, within which is a revolving cylinder thickly set with bobbins of soft wire, which, by the motion of the cylinder, are made to pass very rapidly between the poles of the magnets. The action of the magnets on these revolving points generates a large amount of electricity, which is carried through a conducting wire to the point where the illuminating apparatus is placed, and thence back to the generator. At the illuminating point the circuit is broken, and the two ends of the wire are tipped with pencils formed of the resinous substance which collects in the retorts of gas works. These points become iptensely heated by the passage of the current, and give out an intense white light. As the points burn off, these carbon pencils are fed up by clock-work, so as to preserve a uniform distance between them. The expense of producing the light, exclusive of the cost of the power required to drive the generating machine, is said to be about two cents per hour. In this case, the generator was driven by a small ANDREWS oscillating engine of about two-horse power, which was ample for the purpose. The same generating apparatus may be used to supply several lighthouses at the same time, if in the same neighborhood, as the electricity can be conducted through wires several miles, as in the magnetic telegraph.—*N. Y. Tribune.*

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☞ Correspondents, exchanges and others addressing us should be *extremely careful* to write "JOURNAL OF MINING," instead of "MINING JOURNAL," to ensure safe carriage. Communications intended for publication should be plainly written, and on one side of the paper only.

NEW YORK, SATURDAY, NOVEMBER 2.

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METEORIC SHOWERS.

The approach of the 13th of November suggests to us the topic of meteoric showers, with which that date is especially connected. Yet many other days in the year are also noted for the annual recurrence of these displays; and perhaps the most celebrated date is the 10th of August, when, according to the ancient Irish legend, St. Lawrence weeps his fiery tears. It is a remarkable fact, however, that the November shower is distinguished from all the rest by a periodical maximum, instead of a generally uniform annual brilliancy and extent. This circumstance, together with the great splendor of the maximum November shower, has led to its particular study by astronomers, and to the determination of many facts concerning it, foremost among which are its periodicity, and a reasonable hypothesis as to its nature and cause. Extraordinary meteoric exhibitions are known to have occurred in the following years: 902, 934, 1002, 1202, 1366, 1533, 1602, 1799, 1833 and 1866. The period of their recurrence is therefore about thirty-three years, if we may suppose some observations to be omitted in our imperfect records. This conclusion was in fact verified in a remarkable manner by the fulfilment, last November, of the prediction of PROF. NEWTON, of Yale, announcing the meteoric shower. The amusing dispute, after the observance of the phenomenon in England, between another distinguished astronomer and the N. Y. *Herald*, cannot have passed from the memory of our readers. Truth and the *Herald* together were victorious; and the great shower of 1866 is an established fact.

All the meteoric showers are now believed to be caused by the passage of the earth, in her orbit, through the orbits occupied by streams of meteoric bodies, moving, independently of terrestrial agency, in planetary courses round the sun. HUMBOLDT described them as "pocket planets;" others have supposed them to be the remains of shattered planets, streaming along the paths in which they formerly revolved; and, as such, they have been classed both with aerolites and asteroids. The spectroscope gives, thus far, but a doubtful verdict as to their character; but it is believed to show the incandescent matter to be sometimes metallic and sometimes earthy. They have been thought, therefore, to correspond with the aerolites, in which sulphur, lime, silica, alumina, iron, nickel, cobalt, manganese, tin and copper have been found by analysis;—but no elements unknown on the globe. The rings or orbits of most periodical showers are supposed to be uniformly filled with the meteoric particles, which, coming in contact at immense speed, with the atmosphere of our earth, are raised to glowing heat, and perhaps dissipated, by the retardation of their velocity, and thus appear to us as annual showers of falling stars, radiating from that point of the heavens toward which the globe is tending at the time of transit. The November ring, on the other hand, is supposed to have at one particular part of its circumference an unusual aggregation of meteoric particles, which revolves around the sun in 354 days, or eleven days less than the terrestrial year; so that each transit of the earth across this orbit takes place at a point distant eleven days from the transit of the year preceding. In about thirty-three and a quarter years the circle is completed and the earth meets again the thickest part of the November stream. Another theory would explain the periodicity, namely, that the meteors of this stream complete their orbit but once in thirty-three years and a quarter, which we believe is the view now entertained by LEVERRIER, ADAMS and HERSCHEL, though CARPENTER, of the Royal Observatory, adhered to the period of 354 days and the planetary orbit, as late as January last. LEVERRIER and ADAMS agree in calculating the true orbit of this meteoric stream to be a long ellipse, extending from the earth's orbit at its least, to that of Uranus at its greatest distance from the sun. The most startling confirmation of their belief, is the discovery that a comet seen in 1865 and known as Tempel's comet, *is found to move in exactly the same orbit with the meteoric bodies, throughout their entire revolution round the sun.* Independently of this, the St. Lawrence meteors of August, and the group of meteors which frequent the showery month of April, are already identified in orbit with two bright comets, observed in 1862 and 1861. The spectroscope, with shameful fickleness, corroborates the cometary theory, as it had the planetary one; and declares the meteors to be very like pieces of a comet. HERSCHEL says, "it is not impossible that the meteoric particles are portions of the comet's tails, shreds of a dismembered mist, torn by the sun's disturbing action from the nucleus of the comet, and left upon its path like embers or smoke-flakes in the track of an expiring flame." But this hardly agrees with the old doctrine, not yet discarded, so far as we know, that the tail of a comet goes before, and not behind it. This cometary business is perplexing and strange. Have we earth-dwellers, then, who shuddered so often with fear of a possible collision with some headlong comet, been playing tag with comets since time was? Do we regularly punch one comet in April, and one in August, and one in November, and heaven knows how many more, between-meals? Are comets, after all their bluster, such poor, pusillanimous, damp, unpleasant bodies? We give it up, and return to a point of a more luminous, and less nebulous, character. The meteoric display of 1866, although noticeably brilliant, was far inferior to those of 1833 and 1799; and it is argued, that the thickest part of the meteoric stream was not exactly hit, but that next year will witness another transit of the earth through the same region, eleven days from the last one, and a meteoric shower surpassing, perhaps, that of 1866. Such was the case in 1832 and 1833, and such, expects M. COULVIER GRAVIER, will be the case. We look forward with interest to the eventful morning of the 14th of November next, hoping that successful observations will set at rest some of the novel and interesting questions to which we have alluded. The big shower, or comet's shredded tail, or whatever it is, don't come our way again till 1899, and we hope our readers, one and all, may "be there to see."

ACCIDENT INSURANCE.

A few weeks ago we called attention to the proposition, made in England, for a system of accident insurance for miners—the mine-owners paying the premiums, and insuring all their men, while, on the other hand, the insurance companies should issue policies of a peculiar kind, not mentioning the men by name, but including all the workmen of a given mine in one document. The individual miners might come and go, without affecting such a policy. The mine-owner would pay quarterly his premium, according to the number of men in his employ at the time, or the average of the last quarter; and in case of fatal accident, the insurance would be paid, without reference to the identity of the victims, according to their number and rank—so many strikers, so many boys, &c. A little reflection will show that there is nothing unsound, from a business point of view, in the above plan, though an ordinary life insurance could not possibly be effected in any such way. Lives cannot be exchanged, but chances of danger may be; and hence there is no real difference, on any reasonable theory of probabilities, between insuring one man for ten days against accident, and insuring ten different men, under the same risks, on ten successive days.

This transferability of risks introduces, however, a new and dangerous element into the whole business of accident insurance. Many companies have engaged in this business within the last three years. It is apparently a profitable one, if we may judge from the rapidity with which it has extended itself over the country, and the proportion which the premiums received bear to the number of accidents. Some of these companies could afford to lose annually one per cent. of the lives insured; and as the actual loss is very much less, they reap profits out of all proportion to the capital employed. We know of one or two cases in which accident insurance companies have made up, or are making up, their capital out of the gains of their business—only an insignificant assessment having been originally called in. Of course, the public must be paying rather more than a fair price for the insurance of its limbs and lives; but that is the public's affair. We are only concerned to demand that the security offered shall be certain, if not cheap. This is the very point on which more light is needed. Unknown men and boys are passing through all the trains and steamboats in the country, offering for sale printed policies for any length of time, from a day to a year. Some of them take great pains to write the name of every buyer on his policy, and also in their books; others scribble hastily the name as it strikes their ears, right or wrong, through the noise of a rattling train; still others hand over the blank policy, to be filled with any name the buyer may choose. This is transferable insurance with a vengeance! We have already explained that insurance against accident may be transferred without changing the risk to the company; but the circumstances of the successive policy-holders must be similar. If a blank policy for three days be filled up, on the second day, with the name of a man who died on the first day, the risks of the company, in *that* transaction, are slightly enhanced, to say the least. Or, if one of the small boys who vend accident insurances in connection with dime-novels, pop-corn, and gum-drops, should undertake to make good some unlucky losses in periodical literature by an operation in "securities," and simply sell an unexpired ticket to the expiring brakeman or other victim of a trivial railway misunderstanding, dividing profits with the widow, or haply with said victim himself, who might not expire, but live, to draw his little weekly stipend for self and benefactor, according to what tables could we reckon the profits of the company then? It is for these associations to tell the travelling public what prevents such hypothetical cases from being daily realized. Is it merely the well-known virtue of small boys? Every policy-holder knows that the strict management and absolute security of the company is his only safeguard. Otherwise he pays in high premiums for its extravagances, and is rewarded, after death, by its refusal or inability to afford his heirs the sum which he designed for their support. Accident insurance is a beneficent institution, but it must be an institution, not a speculation. Every man who takes a policy should be certain that no irresponsible agents nor loose habits of business, poorly compensated by exorbitant premiums, are sapping the foundations on which he builds. Let American accident insurance companies explain to the world their system of checks and safeguards, if such they have, and establish themselves on a recognized sound business footing, we shall be prepared to advocate earnestly the extension of their operations into the field of that industry which we more especially represent.

RAILWAY REFORM.

A recent public meeting in this city gave form and direction to the arguments which have appeared, from time to time, of late, in the newspapers, in favor of some new system of railways, by means of which the transportation of freight might be effected with greater cheapness, regularity, and average speed, than is possible under the present complicated circumstances. It is proposed to construct long lines of railway, upon which freight trains may be run, as boats are run upon the canals, on payment of a certain royalty to the owner of the track, and conformity to the necessary uniform regulations as to style of running stock, rate of speed, time-table, &c.

It is much easier to talk about this plan than to elaborate its details and put them into execution. We are not prepared to say, however, that the difficulties in the way are greater than those which American enterprise and capital have often overcome in similar undertakings: and the broad features of the proposition are highly promising of usefulness and profit. But we must protest against the idea, hinted in one of the speeches at the public meeting referred to, that the government of the United States should patronize, superintend or even undertake alone the execution of such a plan. The government of the United States has a great deal too much to do now;—too many offices to fill, too much money to spend. The party in power is charged with corrupt and wasteful administration, and not without cause: but the evil is back of parties, in the nature of men, and the certainty with which the carcass gathers the eagles. You may preach to the eagles; you may drive away the stupid, gorged ones, and call a flock of hungry ones to stand as virtuous sentinels about the carrion: but in vain:—the only way to stop the horrid feast is to take away the carcass. Let us have no more government enterprises than are necessary to preserve peace, and secure obedience to the laws. The Pacific Railroad may be cited as an instance against us: but that work is in private hands, and receiving government aid only in the least objectionable form. Even the Pacific Railroad, though an excellent and necessary work, would not entail unmixed blessing on the country, were it to be accepted as a precedent for appropriations, governmental enterprises, general measures of civilization, &c., *ad infinitum*. The paternal style of government, doing everything for its children, and never allowing them to attain their majority, is out of place in America.

THE PRIZES OF THE AMERICAN INSTITUTE.

It is pleasant in looking over the list of prizes awarded in the department of motive power and machinery (which will be found in this number of our journal), to recognize so many of our esteemed patrons among the successful competitors. We think a comparison of the prize list with our advertising columns will satisfy every one of the high character of those manufacturers and machinists who have chosen the AMERICAN JOURNAL OF MINING as the best medium through which to recommend their wares to public attention; while, on the other hand, we can ask no higher endorsement of our standing in the community than the confidence of those whose intelligence and

wisdom are evidenced by their business success, and proclaimed by the verdicts of juries, such as awarded the victors' laurels in the peaceful contest which has just come to an end. In fact, the circulation of this journal, which is large enough to reward and stimulate, though not to satisfy, our ambition, possesses a peculiar character, which renders it especially suitable as an advertising medium for those who desire to reach a wide-spread and, to some extent, a professional public. Probably no other paper in the country is more broadly scattered through every part of the national domain. In the far mining districts of the West and South, it must also be remembered, such a periodical is not hastily perused and cast aside, but studied and circulated, sometimes until, after passing from camp to camp and cabin to cabin, its tattered pages will no longer hang together. Returning to our text, then, the prizes of the American Institute, we repeat that they give us cause to congratulate our readers on the character of our advertisers, while the latter, we believe, may be sure of finding the way, through our columns, to a large, wide-spread and appreciative public.

The closing days of the Exhibition were worthy of its brilliant course. The splendid oration of HENRY WARD BEECHER, on Friday night, was followed, on Saturday, by the final address of the President, HON. HORACE GREELEY, which closed an undeniable financial and social success.

THE GENESIS OF GOLD.

We commence, this week, the publication of the paper on this subject, read by PROF. HENRY WURTZ, before the Buffalo meeting of the American Association, in 1866. Our readers will see from the author's note of preface, that he exonerates the distinguished editor of the *Chemical News* from the imputation of ignoring that which he ought to have remembered. In this particular instance, PROF. WURTZ may be right in defending his eminent rival; but we are not disposed to recede from the spirit of our late article upon this subject. English *savans* are too apt to overlook the activity of their American brethren; and the case we cited was one of a striking character; for the investigations of PROF. WURTZ in relation to a particular branch of metallurgy—namely, the amalgamation of gold, and the treatment of auriferous ores—had been discussed in England, under circumstances calculated to impress them vividly, not to say unpleasantly, on the minds of those English chemists who are now foremost in the same field. We hope the papers of PROF. WURTZ, which will be published in this journal, may receive the attention of all who are interested in the subjects of which they treat.

THE LONDON METROPOLITAN RAILWAY.

The inquiry of the coroner's jury into the alleged unwholesome condition of the air in the underground Metropolitan Railway of London, has been adjourned three times already for the purpose of allowing full investigation to be made by scientific men. Meanwhile, it is said, the ventilation of the tunnel has been much improved by the company, and the present delay in the proceedings of the jury is understood to be at the desire of the directors, who wish to submit the reports of the experts they have employed.

DIVIDENDS

Atlantic and Great Western Petroleum Co., at 122 Bowery, N. Y., 5 per cent on demand; Pittsburgh and Cherry Run Oil Co., at Pittsburgh, Pa., 6 per cent on demand; Schuylerville Gold Mining Co., of Colorado, 1 per cent.

MEETINGS.

California Petroleum Co., at Continental Hotel, Philada., Nov. 12, 1 P. M.; Tannenhill Silver Mining Co., at 84 Broadway, Nov. 4; Big Smoky Silver Mining Co., at 167 Broadway, Nov. 11.

Scientific Meetings.

POLYTECHNIC BRANCH OF THE AMERICAN INSTITUTE.

APPOINTMENT OF COMMITTEE—NEW PROCESS FOR BENZOLIC ACID—DOME GAS STOVE—VACUUM GAUGE—CARPET STRETCHER AND TACK-DRIVER—KNITTING MACHINE—IMPROVED WINDOW CURTAIN—COMPRESSED EGGS—IMPROVED COG-WHEELS.

The regular weekly meeting of the Polytechnic Branch of the American Institute was held last Thursday evening, Prof. Tillman in the chair. The attendance was unusually large, every seat being occupied.

The Chairman, in accordance with a resolution passed at the last meeting, made the following appointment of a committee to report on the best method for testing the power of engines: P. D. Parmelee, J. B. Root, Warren Rowell, Wm. D. Trowbridge, Charles E. Emery, Hamilton E. Towle, S. H. Maynard, Thomas D. Stetson, Nelson A. Barber, Dr. Van der Weyde and George Peyton.

Dr. Adolph Otto read a paper on the artificial production of benzolic acid, describing the new French process by Costelhaz. This process consists in the transformation of napthaline into bi-proto-chloride of napthaline, which is then changed into phtalic acid. This product is converted into phtalate of ammonia, which, by the action of lime, is changed into benzonitril. By the agency of potassa the benzonitril becomes benzoate of potassa, which, finally, is decomposed by hydrochloric acid.

The regular subject of the evening, the novelties of the late Fair, was then called up.

Mr. Lazear explained his dome gas stove, to which was awarded the first premium. This stove differs from others in two essential particulars: First. The perforated plate is so situated as to be beyond the reach of dirt, or accident, or damage from the flame, rendering unnecessary the direction so often seen—"Be sure and keep the perforated plate clean"—and making the dome burner self-cleaning. Second. It has an air tube through the centre of the burner, serving a double and most important purpose—first, in permitting any foreign substance accidentally dropping upon the burner to pass through, and not obstruct combustion; and, second, in bringing an upward current of air in contact with the arrified gas at the point of ignition, more thoroughly oxygenizing it, and securing a strong and steady flame, free from odor, and without smoke. The invention was highly complimented, and received flattering evidences of commendation from the members present.

Mr. Botticher exhibited his vacuum gauge. The chief improvement is the adjusting screw, by means of which the engineer can tell exactly what kind of pressure there may be in the boiler. The usual objections against mercury gauges were urged by some of the members, but it was claimed that they were entirely removed in this adaptation. The instrument is exceedingly neat, and appears to work satisfactorily.

Mr. Harding explained a patent Carpet Stretcher and Tack-driver, which in point of simplicity and efficiency would seem to more than sufficiently satisfy every demand, however whimsical. With it a lady, unaided, and in a standing posture, can stretch and, at the same time, tack down a carpet as easily as she can sweep it. It is fully efficient in the most inconvenient nooks and corners of a room; uses any kind of tack; is easily worked, and is very ornamental, besides being cheap. It carried off the premium. The same gentleman showed a patent tack extractor, which would take out tacks as fast as the other machine would drive them in.

Mr. Harding also exhibited the Hinkley Family Knitting Machine, which knits literally everything. Its motion is by hand or foot. It works hosiery with heel and toe complete, or heel double, makes twelve pair of socks a day; uses different colors, and works the button-holes in a garment. In brief, it works with a perfection which must ensure its success. It received the first premium.

Mr. Grace explained the working model of an improved window curtain, which does not fall down, and invariably rolls up straight in whatever position it may be placed. Its principle is a compound roller.

Mr. Boole caused much merriment by exhibiting some fresh compressed eggs. The compressed egg is not a substitute, but simply a pure, fresh egg with the water extracted, and is to be used precisely as an ordinary egg. It is especially intended for long voyages, and is not affected by moisture.

Mr. Rowell illustrated with models some remarks on his improved form of cog-wheels. The cogs are very large, and number only five, which permits of their peculiar shape. The motion is claimed to be more continual than in the old form. The cogs may be multiplied by multiplying the layers. The improvement may be applied to any kind of machinery and is now in use in a rolling mill.

The meeting then adjourned to next Thursday night, when the same subject will be continued.

Correspondence.

[To ensure insertion of Correspondence in our columns the full name and address of the writer must be given.]

A Glance at the Present and Future of Silver Mining in Nevada.

MAMMOTH MINING DISTRICT, }
ELLSWORTH, Nye county, Nevada, Oct. 12, 1867. }

EDITORS AMERICAN JOURNAL OF MINING:

From the many inquiries I have received from parties in the East, who are more or less interested in mining in this and other States on this coast, I find that the subject of the extraction and reduction of argentiferous ores is most vaguely and imperfectly understood, even by those who are supposed to be somewhat "posted" upon such subjects. I therefore propose to furnish you and them through the columns of the *Journal* with some facts in regard to

PROFITABLE SILVER MINING.

I recently had the pleasure of perusing the reports of the President and Superintendent of the Savage Silver Mining company, owning 768 feet of the celebrated Comstock lode, Virginia City, Nevada. They are for the year ending July 10, 1867. The President says: "The exhibit should be highly gratifying to the stockholders. It shows the enormous gross product during the year of nearly $3,000,000 in bullion, and *dividends to the amount of* $1,400 *per foot!!* or the sum of $1,075,200 to its stockholders. The gross product of the mine, up to the 10th of July, 1867, was $6,513,378. Litigation during the year cost the company $100,000, but no further trouble is apprehended from this source." The price of the stock having risen to such a figure that the field of buyers were somewhat limited, the capital has been changed from $1,600,000, consisting of 800 shares at $2,000 each, (incorporate value,) to a capital of $3,200,000, divided into 16,000 shares of $200 each.

From the Superintendent's report I find that during the year there were extracted from the mine 70,721 tons of ore, of which amount there was reduced and sold 69,430 tons, yielding in bullion, cash, slugs, &c., $2,914,164.37, or at the rate of $41.97 per ton. The total cost of production for the 70,721 tons, including legal expenses, purchases of land, taxes, and sundry outside expenditures, was $559,581.52, or $7.91 per ton: and the total cost of reduction $974,433.23, or $14.04 per ton, which gives as the total cost of mining, milling and all extra and incidental expenses, $21.95 per ton.

I will now give you some facts in regard to a few of the leading mines of the Comstock lode for the year 1866, taken from the annual report of the Surveyor-General of the State of Nevada. I take these, not because they make any *better showing* than other mines in the State, but because these reports are more full and the mines have been more fully and systematically opened and worked:

NAME OF CLAIM.	Length of Claim in feet.	No. Tons of Ore Raised in 1866.	Av. value per ton	Total yield 1866.	Yield per foot.	Divide's paid in 1866.
Gould & Curry	1200	54 427	$29 09	$1 695 228	$1,319 48	$252,000
Savage	768	38,520	44 68	1 805,800	2,242.54	360,000
Hale & Norcross	400	24,885	45.53	1,199,768	2,832.72	350,000
Imperial	183½	26,339	26 56	910,187	3,808 59	176,000
Yellow Jacket	942.4	78,570	30.52	2,310,000	2,541.65	390,000
Crown Point	541.58	34,194	38.52	1,313,057	2 439.02	231,000

From this table it will be seen that with ore averaging but $35.82 per ton the six companies divided to these stockholders during the year 1866 the sum of $1,562,000—and, I presume, *one hundred per cent.* upon the original investment in those mines.

Now let me take a few of the mines at Austin, (Reese River District,) Nevada, and see what the ore produced averaged per ton. I have the amount produced by the Buel, North Star, Florida, Manhattan, North Star, Timoke, Magnolia and Washington, for the nine months ending June 30th, 1867, and I find the average to be $232.61 per ton, or over *six times* the value of the average of that on the Comstock lode; but whether the profits were correspondingly larger or not, I have no data for knowing, but see no reason why they will not be when the mines are as fully and systematically opened and worked.

There is one thing that parties interested in mining should bear in mind, which is, that it is only eight years since the subject of the manipulation and working of argentiferous ores was first commenced on the Pacific Coast; and that there are really at this time no mines in the States of Nevada or Idaho that are *systematically* and *fully opened for the economical extraction of their ores*, except a portion of those on the famous Comstock lode of Virginia City and Gold Hill, Nevada. Knowing this, and having visited nearly all the principal districts and mines in Central and Eastern Nevada, I do not hesitate to say that in my humble opinion future developments here and in other parts of the State will prove that we have many claims which are *far richer* than that celebrated lode, and will eventually pay immeasurably larger dividends to their lucky stockholders, and all that is wanted to realize such results is *capital* to systematically and fully open the ledges and *time* to do it—for it is not the work of a month or even a year to fully accomplish such a result—and which, it seems to me, should be apparent to all upon due reflection, but which I find has been very poorly understood by a majority of our Eastern friends. EDWIN.

THE AMERICAN INSTITUTE FAIR.

PREMIUMS TO EXHIBITORS.

In accordance with previous announcements the Fair closed last Saturday evening. During the day and evening immense crowds thronged the building, estimated to number from eight thousand to ten thousand. The managers say in reference to the award of premiums: "The Board of Managers have determined to elevate the standard of excellence in articles on exhibition by declining to give the first premium to any article unless pronounced by competent judges, of great utility and equal or superior to any like article known to them, whether on exhibition or not. It will therefore be understood that in granting second and third premiums in many cases does not imply that there were articles in the exhibition superior to those which have failed to obtain the first premium." We have not space for the entire list, but subjoin the revised list of awards in the departments of Chemistry and Mineralogy, Engines and Machinery, and of Intercommunication, as being most interesting to our readers. The awards for Pumps have not been before published by any paper.

DEPARTMENT IV.—CHEMISTRY AND MINERALOGY.

Colgate & Co., New-York, for Toilet Soaps—2d premium.
Van Haagen, McKeone & Co., for Toilet Soaps—3d premium.
L. S. Judd, for Paraffine Candles—1st premium.
E. A. Chesebrough & Co., for Lubricating Oils—1st premium.
Julius Pollock, for Pyrozylic Spirit—1st premium.
W. R. Wynkoop, for Naiad Water Proof Oil—1st premium.
John Mathews, for Apparatus for Making Soda and Mineral Water—1st premium.
John Mathews, for Apparatus for Dispensing Soda Water—1st premium.
Robert Grant, for Soda Water Apparatus—1st premium.
John Mathews, for Somers, Tumbler Washer—3d premium.
Pennsylvania Salt Manufacturing Company, for Concentrated Alum—2d premium.
Pennsylvania Salt Manufacturing Company, for Bicarbonate Soda—2d premium.
Charles Pfizer & Co., for Chemicals, especially Iodided Potassium, Gallic Acid, Per Mangrate of Potassa and Borax—1st premium.
Rosengarten & Son, for Chemicals, especially the Salts of Quinine and Morphine, Bromide of Potassium and Iodide of Mercury—1st premium.
L. Martin & Co., for Chemicals, especially for Purity of Acids, Iron by Hydrogen, Nitrate of Silver, and Salts of Bismuth—1st premium.
Powers and Weightman, for Chemicals, especially Oxide of Zinc, Morphine Salts, and Salt of Quinine.
M. Kalbfleisch & Sons, for Chemical, Acids—1st premium.
Mapes' Superphosphate and Guano Co., for Improved Superphosphate—2d premium.
Phœnix Chemical Co., for Phœnix Disinfectant—1st premium.
Perkins, Stem & Co., for California Hock and Claret—3d premium.
Simmons, Butler & Co., for Morocco and Sheep Skins—1st premium.
Union Paste and Sizing Co., for Union Paste—2d premium.
J. E. Almy, for Glucine Cement—2d premium.
L. H. Hale, for Tobaccorette—2d premium.
F. S. Harzman, for Cigarette Roller—2d premium.
H. R. Schnacke, Inventor, for Composition Roofing—2d premium.
W. L. Potter, Inventor, for Plastic Slate Roofing—3d premium.
Cooley, Smith & Bradley, for Bricks for Chimney—1st premium.
Eagle Slate Company, for Slate for roofing—1st premium.
Bishop & Co., for Gutta Percha Goods—1st premium.
Thos. H. Spencer, Inventor, for Novelty Blacking—3d premium.
J. H. Doughty, for a Blacking Box—3d premium.
French Chemical Works, for Artificial Fruit Extracts—2d premium.
J. J. Squires, for a Fruit Jar—2d premium.
C. C. Williams & Co., for Preserved Fruit—2d premium.
Cape, Culver, & Co., for Hams and Bacon—2d premium.
Taylor & Young, for Pioneer Yeast Powder—2d premium.
Phœnix Mustard Co., for Phœnix Mustard—2d premium.
Chas. L. Stickney, for Mustard—3d premium.
James Morton, for Biscuit—2d premium.
L. H. Boole, for Compressed Eggs—3d premium.
Peter Cooper, for Gelatine—2d premium.
T. P. Mayer, for Spinning for Chemical Apparatus—1st premium.
Caldwells, Shaw & Willard, for Specimens of Burning Tin and Lead for Soldering without Solder—1st premium.
J. P. Grunder, for Filtering Apparatus—1st premium.

DEPARTMENT V.—ENGINES AND MACHINERY.

Washington Iron Words, Newburgh, N. Y., "Wright's" Horizontal Engine—1st premium.
Hope Iron Works, Providence, R. I., Babcock, Wilcox & Co.'s Engine—2d premium.
Root Steam Engine Company, New-York, "Root's" Trunk Engine—3d premium.
Horatio Allen, New-York, Pendulum Screw Propeller Engine—2d premium.
William E. Bird, New-York, Oscillating Engine—3d premium.
Metropolitan Steam Engine Company, New-York, "Orthick's" Rotary Engine—3d premium.
Wilcox Caloric Engine Company, Providence, R. I., "Wilcox" Caloric Engine—3d premium.
Gerner Steam Boiler Company, New-York, "Gerner" Steam Boiler—2d premium.
Root Steam Engine Company, New-York, "Root's" Sectional Wrought-Iron Safety Boiler—2d premium.
R. W. & D. Davis, Long Island City, L. I., Davis' Safety Superheating Boiler—3d premium.
Symmes & Hayes, New-York, Cone Boiler—3d premium.
Knowel & Warren, Mass., Knowel's Automatic Boiler Feeder, 1st premium.
Fat. & Tim. Clarke, New-York, Clarke Steam Fire Regulator—2d premium.
Pratt, Whitney & Co., Hartford, Conn., Engine Lathe (Taper Attachment)—2d premium.
H. K. Smith, Norwich, Conn., Small Engine Lathe—1st premium.
Hall, Washburne & Co., New-York, Engine Lathe—(Cross Feed)—3d premium.
H. D. Stover, New-York, Engine Lathe—3d premium.
Adam Stuart, New-York, Foot Lathe (Slide, Rest and Eccentric Check—3d premium.
New-York Steam Engine Co., New-York, Bolt and Screw Cutting Machine—2d premium.
H. D. Stover, New-York, Large Planer—2d premium.
New-York Steam Engine Co., New-York—Crank Planer—3d premium.
New-York Steam Engine Co., New-York, Large Shaping Machine—2d premium.
H. D. Stover, New-York, Small Shaping Machine—2d premium.
New-York Steam Engine Co., New-York, Drill Press, Swing Table—2d premium.
New-York Steam Engine Co., New-York, Car Wheel Drill Press—2d premium.

New-York Steam Engine Co., New-York. Horizontal Drill and Boring Machine—2d premium.
V. F. Douglass, Stamford, Conn., Friction Self-fed Hand Drill—3d premium.
Hall, Washburn & Co., New-York, Hand Drill Press—3d premium.
Golding, Cheney & Co., Providence, R. I., Drop Hammer—2d premium.
N. C. Stiles, West Meriden, Conn., Drop Hammer—3d premium.
T. Prosser & Son, New-York, Compressed Air Forging Hammer—2d premium.
N. Hotchkiss, New-York, Air Spring Forging Hammer—2d premium.
R. Dudgeon, New-York, Steam Forging Hammer—2d premium.
N. C. Stiles, West Meriden, Conn., (2)Power Punching and Draming Presses—2d premium.
E. Brown, New-York, (2) Power Punching and Draming Presses—2d premium)
N. C. Stiles, West Meriden, Conn., Foot Punching Press—3d premium.
E. Brown, New York, Foot Punching Press—3d premium.
C. Graham, Kinston, Penn., Hydraulic Spring Tester—2d premium.
J. Patterson, Williamsburgh, N. Y., Blacksmiths' Forge and Tuyere—1st premium.
Cooper & Phillips, Providence, R. I., Planer, Lathe and Threading Tool Holder—2d premium.
T. L. Webster, Navy-yard, Brooklyn, Jointed Holder for Planing and Slotting—2d premium.
Webster & Co., New-York, Tools for Cutting Off and Threading Pipe—2d premium.
G. W. Harris, New York, Lathe Check for Drills, &c.—2d premium.
S. Wing, New-York, Valve Refitting Machine—2d premium.
T. G. Hall, New-York, Compound Lever Cut Nippers—2d premium.
T. Prosser & Sons, New-York Case Boiler Makers' Tools—2d premium.
T. C. Entwistle, New-York, Mode Transmitting Motion—3d premium.
J. W. Crosley, New-York, Tobacco-cutter—2d premium.
J. H. Brown, Hand-pegging Machine—2d premium.
B. Kreischer, Fire Brick—2d premium.
D. W. Seeley, Albany, New-York, Seeley's American Brick-machine—2d premium.
C. Murdock, Automatic Stave-machine—1st premium.
Huntington Machine, Newark, Spoke Turner—3d premium.
J. A. Fay & Co., Cincinnati, Ohio, Surface Planer, Car Work—2d premium.
G. V. Orton & Co., Cincinnati, Ohio, Machine for Wiring Blinds—2d premium.
J. B. Crosley, Machine for Wiring Blinds—3d premium.
G. J. Ragg, Worcester, Mass., Planing, Tongueing and Grooving machine—2d premium.
Seymour & Whitlock, Newark, N. J., Last-turning Machine, 3d premium.
H. D. Baines, New-Haven, Shingle-machine—3d premium.
C. B. Rogers & Co., Norwich, Planer Matcher and Double Surface Planer—2d premium.
First & Pryibil, New-York, Band Sawing Machine—2d premium.
Seymour & Whitlock, Circular Saw—3d premium.
B. D. Whitney, Massa lusetts, Stave Saw Machine—2d premium.
T. Wright, Newark, Circular Sawand Moulding Machine—2d premium.
J. A. Fay & Co., Cincinnati, Ohio, Scroll Saw, light—2d premium.
I. Wright, Newark, Scroll Saw, heavy—2d premium.
E. R. Ryder, New-York, Foot Scroll Saw—3d premium.
D. Kerney, New-York, Circular Saw Arbors—3d premium.
W. H. Doane, Cincinnati, Ohio, Mortice Machine—3d premium.
J. A. Fay & Co., Cincinnati, Ohio, Mortice Machine, car work—2d premium.
C. B. Rogers & Co., Mortice Machine, for general work—2d premium.
Seymour & Whitlock, Newark, Boring Blind Slats—3d premium.
Seymour & Whitlock, Mitre Cutting Machine—3d premium.
I. Wright, Newark, N. J., Cross-cut Traverse Saw—3d premium.
C. B. Rogers & Co., Sash Sticking Machine—2d premium.
J. A. Fay & Co., Cincinnati, Moulding Machine—3d premium
Huntington Machine Co., Moulding Machine—2d premium.
Baxter & Whitney, Smoothing Machine—1st premium.
Baxter & Whitney, Cylinder Surface Planer—1st premium
Asahel Davis, Surface Planer—3d premium.
C. B. Rogers & Co., Threeside Moulding Machine—2d premium.
J. Richards, New-York, Lathe—3d premium.
G. B. Orton, Cincinnati, Ohio, Machine for Moulding Ends of Sash—2d premium.
Chas. H. Richards, Hartford, Conn., for Steam Engine Indicator—2d premium.
Chas. Brombucher, New-York, for Paper Cutter—2d premium.
Jno. Bayliss, New-York, for Hot Blast and Water Tuyere iron—2d premium.
Geo. W. Bright, Philadelphia, Fan Blower for Forges—3d premium
Chas J. Hancks, Brooklyn, N. Y., Patent Oil Filers and Machine Oilers—3d premium.
F. P. Meyer, New York, Metal Spinning and Samples—3d premium.
Collins & Co., Hartford, Conn., Case of Wrenches—3d premium.
American Ship Windlass Co., Providence, R. I., Steam Winch—3d premium
Edwin Parker, Schenectady, N. Y., Steam Slide Ballance—3d premium.
J. S. Hoar, West Acton, Mass., Bench, Vice and Screw Wrenches—3d premium.
David Shive, Philadelphia Penn., Steam Governor—3d premium.
Douglass Manufacturing Co., New-York, Case Mechanics' Tools—2d premium.
John Burtons, Concord, N. H., Improved Oil'y Square—2d premium.
Van Anden File Co., New York, Case File and Rasps—3d premium.
Columbian Metal Works, New-York, Brass and Copper Tubes—3d premium.
N. Dunn, New-York, Drill Pump used to Blasting—3d premium.
Jones & Laughlin, Pittsburgh, Penn., Cold Rolled Shafting—2d premium.
Hempe & Zimmerman, New York, Leather Belting—3d premium.
John Broughton, Brooklyn, N. Y., Case of Lubricators, Gauges, Oil Cups &c.—3d premium.
W. Gee, New York, Case Lubricators, Oil Cups—3d premium.
Sam. Hall, Sons & Co., New-York, Table, Bolts, Nuts, Washer, &c.—3d premium.
G. W. Bishop, Stamford, Conn., Friction Clutch Pulley—3d premium.
Howe & Murdock, Woodstock, R. I., Herculean Power Lifting-machine—3d premium.
J. R. Harrington, Brooklyn, Tuyere Iron—3d premium.
John J. Doyle, New-York, Compound Eccentric Power Tackel—3d premium.
A. P. Brown, New York, Steam Engine Governor—2d premium.
Milo Peck, New Haven, Conn., Low Water Detector—3d premium.
H. G. Ludlow, Troy, N. Y., Sliding Stop Valve—3d premium.
Anson P. Stevens, Brooklyn, N. Y., Parallel Vice—3d premium.
John Richardson, New York, Hair-brushing Machine—3d premium.
W. H. Doane, Cincinnati, Ohio, Patent Compression Shaft, Coupling—2d premium.
Wm. H. Doane, Cincinnati, Ohio, Patent Coupling hangers and Shafting—3d premium.
J. F. Emerson, Trenton, N. J., Anvil, Shears and Punching machine—3d premium.
Peak & Guillauden, New-York, Self-adjusting Pipe-wrenches—2d premium.
Mr. Warren, Wallingford, Conn., Universal Boiler Alarm Guage—2d premium.
N. Bangs, Williams & Co., Providence R. I., Lubricating Cups—2d premium.
Falls, Jenks & Son, Rhode Island, for Spinning Frame—2d premium.
Gambrill & Burgess, Baltimore, Md., for self-stripping Cotton Cards—3d premium.
Wellman & Lorrell, Mass., Automatic Self-stripping Cards—2d premium.
Whiteside Brothers, Moodus, N. Y., for Linen Loom—2d premium.
L. J. Knowles & Brothers, Warren, Mass., for Webbing and Tape Loom—1st premium.
L. J. Knowles & Bros., Warren, Mass., Woolen Loom, (three shuttles)—1st premium.
Albany Agricultural Works, New York, Cotton Gin and Condenser—2d premium.
S. K. Parkhurst, Newark, N. J., Cotton Gin, Self-Feeding and Sliver Attachment—2d premium.
R. Bryson, Lowell, Mass., Two Beater Cotton Picker—2d premium.
S. R. Parkhurst, Newark, N. Y., Wool Picker, Burrer and Sliver—3d premium.
C. L. Goddard, New York, Wool Picker and Burrer, (Mestizo wool)—2d premium.
S. R. Parkhurst, Newark, N. J., for Double Burrer Rolls, (and single)—2d premium.
Sargent Card Clothing Company, Worchester, Mass., for Card Clothing—2d premium.
D. McFarland, Worcester, Mass., for Carding Machine—1st premium.
Brown & Ashworth, Lowell, Mass., for Wine Heddle Machine—1st premium.
Hat Manufacturing Lathe—3d premium.
L. & P. R. Dederich, Albany, N. Y., for Toggle Link Press—2d premium.
Hadley & Co., Hadley, Mass., for Single Spooler—2d premium.
Burnstein & Brothers, N. Y., Chenille Machine, (for principle)—2d premium.
Henry Rayser, New York, for Fire Loom Temples—2d premium.
Theo. Crossley, Bridgeport, Conn., for Carpet Printing Machine—1st premium.

DEPARTMENT VI.—INTERCOMMUNICATION.

Joseph Page Woodbury, Boston, Mass., for working model of Locomotive Street Cars—1st premium.
Bridges & Lane, New York, for four Jack Screws—1st premium.
Joseph Lixon, New York, for Cast Iron Plates for Underground Railway—1st premium.
Alfred E. Beach, New York, for the exhibition of a working section of a Pneumatic Railway—1st premium.
James Eustace, New York, for case of Fancy Leather Goods—1st premium.
J. Palmer & Co., Concord, N. H., for Improved Carriage Springs—1st premium.
John Raddin, Lynn, Mass., for Elastic Carriage Wheel—1st premium.
J. Bryant, M. D., Brooklyn, for Safety Bridle—3d premium.
George P. Overin & Co., New York, for case of Whips and Lashes—1st premium.
C. Ducreux, New York, for an Arrangement for Detaching Runaway Horses—1st premium.
F. B. Doughty, New York, for Interfering Hoof Cushion—2d premium.
Eugene Ward, New York, for a Runner for Shoeing Express Wagons—2d premium.
J. Barclay, Attleboro, Mass., for Improved Carriage Knobs—3d premium.
John Goulding, New York, for Life-Preserving Mattress—1st Premium.
Spalding & Collin, Boston, Mass., for Union Power Capstan—1st premium.
Jas. I. Jackson & Brother, New York, for Screw Steering Apparatus—1st premium.
David Kirby, Rye, N. Y., for Models of Yachts—2d premium.
Samuel Brown, New York, for a Boat Detaching Apparatus—1st premium.
F. G. Fowler, Springfield, Ill., for a Working Model of Steering Propeller—1st premium.
L. Bradley, Jersey City, N. J., for a Telegraphic Relay—1st premium.
L. G. Tillotson & Co., N. Y., for a Telegraph Register—2d premium.
The Bishop Gutta Percha Co., New York, for Submarine Cables—1st premium.
Wm. R. Allison, Philadelphia, Penn., for Paraffine Telegraph Insulator—3d premium.
Thos. S. Hall, Stamford, Conn., for a Magnetic Railway Switch Alarm Signal—1st premium.
Jerome Kidder, New York, for an Electro-Medical Apparatus—1st premium.
The American Fire Detector Co., New York, for a Fire Detector—1st premium.
Saml. Gardiner, New York, for an Electric Gas Lighter—2d premium.
Alfred E. Beach, New York, for a Pneumatic Postal Dispatch—1st premium.
Milo Feck & Co., New Haven, Conn., for Newspaper Directing Machine—1st premium.
Heath, Smith & Co., New York, for a Graining Machine—1st premium.
J. F. Trow, New York, for Type-setting and Distributing Machine—1st premium.
Wood & Tuttle, Boston, Mass., for Printing Press—1st premium.
John Most, New York, for a Lithographic Press—2d premium.
George P. Gordon, New York, for Improved Card and Bill Head Press—1st premium.
Otis Brothers, New York, for Hoisting Apparatus—1st premium.
John P. Gruber, New York, for a Bank Scale—1st premium.
Herman Kohlbursch, Hudson City, N. J., for Diamond and Druggists' Scales—1st premium.

UNCLASSED AWARDS.

The following articles have been decided by the Judges to be of the highest order of merit, but in accordance with section II of the by-laws, no premium or anything in lieu thereof can be given to the exhibitors, they being officers of the Institute:

J. C. Hull's Son, for Toilet Soaps; Cement, Hawks & Maynard, for pearl and ivory Table Cutlery; American Spiral Spring Butt Hinge Co., for Spiral Spring Butts; Joseph Dixon & Co., for Plumbago Crucibles; American Photo-Lithographic Co., for Photo-Lithographs; Francis & Loutrel, for Account Books; Francis & Loutrel, patent Spring Backs for blank books; Francis & Loutrel, for patent Printers' Ink Rollers.

The following articles in Department No. 1 were decided by the Judges to be of the highest excellence, but being foreign productions, they are not entitled to premiums, according to the By-laws of the American Institute:

Goddess of Liberty, Allegorical Painting by Spangenberg of Germany; exhibited by Hermann Funke. Orchestrine, by Welte; exhibited by Weire & Sons, No. 157 Fifth avenue. Clark's Automatic Spooler.

We are reluctantly compelled to go to press without the expected award of prizes for pumps, as the judges will not report before next Wednesday.

Petroleum Burning in California.

The San Francisco *Morning Call* says: Captain J. H. White, of this city, has succeeded in inventing a furnace for the burning of coal oil under steam boilers, and, about a week ago, tested his invention in the presence of quite a number of scientific gentlemen and engineers, at the coal oil mills at Santa Cruz. The boiler was seven feet and a half long and three feet in diameter, and generated the steam to run a six-horse power engine, a centrifical machine used to extract the oil from the petroleum rock after it had been subjected to steam in two large vats for several hours. The only addition to the ordinary furnace consisted of three cylinders, each three feet long, and eight inches in diameter, and studded with little tubes similar to gas burners: a smaller cylinder for the purpose of carrying hydrogen gas into the furnace and throwing a jet upon the cylinders containing the oil. A tube, regulated by a stop cock, conveyed the oil into the cylinders, and another tube, filled with iron wire, received the steam and condensed it. All things being in readiness, a common fire was put under the boiler, and in forty minutes the steam gauge showed that there were forty-five pounds of steam to the square inch in the boiler. The oil was then turned into the cylinder, but failed to ignite; the hydrogen jet was then let on, and in an instant the oil was burning a bright blue and intensely hot blaze, and in eleven minutes the steam gauge showed that there were eighty-four pounds to the square inch. The fire was then raked out and dampened down, and nothing but the flame generated by the coal oil kept under the boiler. The engine and all the machinery were worked at full throttle, and even then it was found that the steam could not be worked off as rapidly as it was generated, and it was also discovered that the pump could not throw water into the boiler as fast as the heat generated the steam. The oil was then turned off from the cylinder, and only one left burning, and it was found amply sufficient to generate all the steam that could be used. As soon as the oil took fire, the hydrogen gas was shut off, and the oil burned apparently just as well. Upon opening the door of the furnace a solid mass of flame, completely filling the furnace chamber, was discovered. An iron measure was then inserted, and it was found that from each tube a sheet of flame, eleven inches in length, issued forth. With a single cylinder the engine was run at full throttle for eleven hours, and it was then found that twenty-six gallons and one quart of coal oil had been consumed, and that not a particle of smoke had been emitted from the chimneys, nor had a particle of soot been deposited. From the time the oil was turned on until the eleven hours had passed, the doors of the furnace were not opened except for the purpose of showing the flame to the spectators. Once during the time all the cylinders were again started, and some eight-inch square vents opened, when the flame was forced through them a distance of six feet. The invention is a complete success, and proper steps have been taken to secure a patent for it. Captain White informs us that twenty-five gallons of coal oil, which can be manufactured at twenty cents per gallon, will last as long as a ton of the best English coal, which costs twenty-three dollars per ton. The saving to a steamship making a trip from this port to Hongkong will be $84,000.

A New Sulphuret Process.

A correspondent of the *Alta California* recently wrote from Sutter creek as follows with regard to what appears to be a new process for treating sulphurets: Nothing that I have seen in my trip has interested me more than the sulphuret works twelve miles east of Jackson. Here sulphurets are purchased, and are worked by a process known only to the proprietor, a German named Thoss. Sulphurets are reduced elsewhere by chlorination, at a cost of about $25 per ton, but all the silver is lost, and roasting is necessary as a preliminary; whereas Thoss does not roast, saves all the silver, and says he can catch ninety per cent. of the gold at a cost of $8 per ton. I look with suspicion at all new and secret processes, and I enquired of intelligent miners at Sutter's creek, Volcano and Pine Grove, who have had business with this sulphuret mill, and all spoke well of it. Mr. McLane, of the Sirocco mine, said he paid $80 per ton for working sulphurets, and had received a return of $240 per ton. No one seems to have any idea of the nature of the process. The sulphurets are ground in an arastra, which anybody can use, and are then discharged into a small, close, dark chamber beneath, to which nobody, save the proprietor, has access. Much of the ore near Pine Grove and Volcano is very rich in sulphurets; so there is abundant business there for a mill of this kind. Faith in chlorination is, however, not extinct. The largest chlorination works in the State have lately been erected by Coney & Bigelow (the latter of Bigelow & Bros., San Francisco,) at Jackson. Their mine would not pay to work for free gold, but is very rich in sulphurets, yielding five per cent. of them, with $200 per ton. The furnace has a capacity to roast three tons in twenty-four hours. There are two hearths, one over the other, and a ton and a half is kept in each hearth. After roasting twelve hours the lower hearth is discharged, the contents of the upper are let down to the lower, and the upper receives a new charge, and so on. The chlorination works, under charge of John Agrell, Esq., had just started when I was in Jackson.

Perpetual Motion the Salvation of Quartz Millers!

The Nevada (Cal.) *Transcript* of the 17th says that Wm. C. Styles, of Nevada, has gone to Washington for the purpose of securing a patent for a new mechanical power, or a new application of motion and power, which is destined to revolutionize the motion now used in machinery. By it a weight is made to act as the power to lift itself. Stiles has been engaged on this machine for four or five years, and has managed it so secretly that even his most intimate friends could learn nothing of its nature. A short time before leaving, we are informed that the model was worked in the presence of one or more of our citizens, and one of them now offers to bet ten thousand dollars that Stiles will accomplish what he has undertaken, and that the cost of running quartz mills and other machinery, when this invention is introduced, will be less than one half what it is now.

Patent Claims.

Interesting to Miners, Millmen, Metallurgists, Oil-Men, and Others.

The following claims have recently been issued from the United States Patent Office:

69,953.—CONSTRUCTION OF METALLURGIC AND OTHER FURNACES.—Henning Boetius, Hanover, Kingdom of Prussia:

I claim providing furnaces which are to be used in the manufacture of glass, iron, steel, or other metals and substances, and for other purposes, with a series of flues, d, d, arranged around the outer walls of the fire-place, or in the walls between the fire-places, for the purpose of conveying air to the combustible gases evolved from the fuel, said flues being provided with a valve or valves, t, all as herein shown and described and for the purposes set forth

70,038.—APPARATUS FOR CASTING REFRACTORY METALS.—Michael Smith, Philadelphia, Pa.:

1 claim. 1st, the provision in a mold for casting metals of a plunger K, and a separate injecting vessel or cylinder, J, having a lining of clay and plumbago, or other suitable non-conducting material, to be detached in the manner described, and a temporary closable communication with the molds, substantially as and for the purpose set forth.

2d, The combination of the mold-box, D, detachable thimble, I, injecting cylinder, J, and plunger, K, all constructed, arranged, and operating in the manner and for the purposes explained.

3d, The arrangement of a series of molds having consecutive orifices or gates, a slab or follower, B, set screws, F, and box, D, as and for the purpose set

4th, The subject of the clause last recited, when inclosed within a tight chest, G, having suitable connection with an air-exhaust, for the purpose stated.

70,042.—MELTING FURNACE FOR THE MANUFACTURE OF STEEL.—William Swindell, Allegheny City, Pa.:

I claim, 1st, Constructing melting furnaces for manufacture of steel with iron casing, or shell-lined with fire-brick, substantially as and for the purposes herein before described.

2d, The use, in combination with the iron casing or shell of steel furnaces, of supports for upholding the upper portion of the brick lining, while the lower portion is removed or repaired, substantially as herein before described.

3d, The air-holes, i, i, around the grating at the bottom of steel furnaces to allow the air to enter between the grate-bars all around, for the purpose of equalizing the combustion of the fuel with the furnace.

70,045.—KILN FOR ROASTING IRON ORES.—Alois Thoma, assignor to himself, Samuel Bromberg, and Artemus W. Wilder, New York city:

I claim, 1st, The arrangement of the channels, a, b, and c, within the kiln A, B, for conducting gas and air to the ore, substantially as herein shown and described.

2d, The perforated pipe, e, when arranged in the lower part, B, of the kiln, in combination with the channels, d, d, made as set forth.

3d, The process, herein shown and described, of roasting ore by means of gases discharged from distant fires of any kind of fuel, as described.

4th, The process, herein shown and described, of desulphurizing the ore while roasting the same by conducting water into the pipe, e, whereby the use of steam boiler is dispensed with, and by combining the steam produced from the water with atmospheric air, as and for the purpose set forth.

70,046.—FURNACE FOR SMELTING IRON ORES.—Alois Thoma, assignor to himself, Samuel Bromberg, and Artemus W. Wilder, New York city:

I claim, 1st, Arresting the gases arising from smelting furnaces so that they may be used for the roasting or some other purpose, substantially as herein shown and described.

2d, Providing a smelting furnace with two discharge channels, D, D, having suitable drain-stones, E, E, substantially as and for the purpose herein shown and described.

3d, The channels, b, b, when arranged in a smelting furnace to retain and carry off the gases, as set forth.

4th, The shoulder, a, when formed in the charge-chamber of the furnace, in combination with the channels, b, b, all made and operating substantially as and for the purpose herein shown and described.

5th, The channels, b, b, in a smelting furnace, when combined with the channels, c, blocks or doors, d, and chimneys, e, all made and operating as and for the purpose shown and described.

70,047.—FURNACE FOR REDUCING IRON ORES.—Alois Thoma, assignor to himself, Samuel Bromberg, and Artemus W. Wilder, New Yorrk city:

I claim, 1st, Reducing iron ore by means of gases produced from fires, the fuel of which is not in contact with the ores, substantially as and for the purposes herein shown and described.

2d, The arrangement of the structures, A, and C, connected by channels, d and e, and with air-blasts, h, substantially as herein shown and described.

3d, The arrangement in the lower part of the tube, A, of the sliding grate or plate, f, and removable or sliding bottom, g, all made as described.

70,048.—FURNACE FOR MELTING AND PURYFYING STEEL.—Alois Thoma, assignor to himself, Samuel Bromberg, and Artemus W. Wilder, New York city:

I claim, 1st, Smelting steel in an open pan by blowing a purified flame over the surface of the steel in the pan, substantially as herein shown and described.

2d, The pan, I, in which the steel to be smelted is placed when said pan is made in sections, so that it can be easily inserted and removed through the narrow doors of the furnace, substantially as herein shown and described.

3d, Connecting the smelting oven, C, with the air-heating chamber, D, by means of a chamber, b, so that the air-pipe, n, is heated in the chamber, D, and not in the oven, C, substantially as and for the purpose herein shown and described.

4th, So arranging a furnace for smelting steel that the steel can be tested and treated during the smelting process, substantially as herein shown and described.

5th, The chambers, C, D, and E, when connected by channels, a and b, and when combined with the reservoir, I, blast-channel, j, pan I, and pipe, n, all made, arranged, and operating substantially as and for the purpose herein shown and described.

6th, Making the blast-channel, j, wider at its lower end and arranging it obliquely in the furnace, substantially as and for the purpose shown and described.

70,117.—APPARATUS FOR BURNING HYDRO-CARBONS.—H. A. V. Post and Jeptha Jarrard, Cincinnati, Ohio:

We claim the arrangement of a receptacle, C, for hydro-carbon or other oils, or other liquid fuel, below a furnace or combustion-chamber, B, in connection with a pipe or pipes through which air or air and steam is forced through apertures or nozzles situated below the surface of the liquid fuel and thence through the body of the liquid fuel, substantially as and for the purpose set forth.

☞ According to a Halifax paper, during the quarter ending 30th September, there were 53,657 tons of coal shipped from the port of Cow Bay, Cape Breton. It was taken in 154 vessels.

☞ Nova Scotia is taking higher rank among the gold-producing countries of the earth. A shipment of ingots valued at $32,000 recently took place from Halifax to Boston.

On-dit about Minerals, &c.

☞ The production of plumbago in California is exciting much interest. That mineral is found in several leads in Tuolumne county, but the principal working deposit is in Tennessee Gulch, a mile and a half from Sonora, on the road to Columbia. The course of the vein is northeast and northwest; its dip is eastward; its thickness about twenty feet, and its walls are slate on one side and limestone on the other. It appears in some places to be rather a stratum than a vein, and is mixed to a large extent with sand near the surface. There are seams of slate running through it, and the plumbago as found in the mine is too impure for commercial purposes. It is prepared for the market by stirring it in an arastra with water—not grinding it—to a thin pulp, the lightest portion of which runs off from the top by a constant stream to a tank 200 feet long and 150 feet wide, where the plumbago is deposited. The sand, slate, and other earthy matter being heavier than the plumbago, remain at the bottom of the arastra, from which it is discharged through a gate once in three hours. When the deposit of plumbago in the tank is three feet deep the supply is stopped, and after a couple of days, the water having become nearly clear, is let off, and the plumbago dries sufficiently to be taken out and placed on the drying platform, and in a couple of days more it is ready for shipment. It can be made still cleaner by washing it again in the same manner. The cost of production is less than $10 per ton, and the freight from the mine to New York, including all incidental expenses, is about $30 per ton. The price in New York and Liverpool is reported to be about $100 gold per ton. The production is about twenty tons per day, but this rate of production was not commenced until this year, for the value of the article was not known. Plumbago is found in Calaveras county, and also in Fresno, and the State is probably able to supply all the demands of commerce.

☞ Mr. John Calvert, the British geologist, has made an interesting discovery, whilst investigating an elvan course which runs near the Exeter road, not far from South Tawton; the mineral is called "Cronstedtite," and is very rare, having only been hitherto sparingly found at Przibram, in Bohemia, and at Wheal Maudlin, Cornwall.

☞ The Emperor of Russia has ordered the establishment of a commission charged to inquire into the best means of extracting and employing anthracite coal from the rich beds in the territory of the Don Cossacks.

All Sorts.

☞ At the Paris Exposition, a Russian engineer exhibited a railway invention which attracts considerable curiosity. The object is to save the power gained in a descent, now lost in the friction of the brakes, with wear and tear, and use it in an ascent. To do this the engineer has attached to the locomotive two very heavy fly-wheels. Going down hill they act as a brake, and the force they gather will carry the train up an equal rise, less the friction. Here a model train loaded with water runs down a sharp incline, the water runs off, and the force of the fly wheel carries the train back to the place of starting. In this way a short railway, taking down an incline, from the pit mouth, for example could be worked without any other power but that gained by each descent of the train.

☞ We have seen petroleum oil recommended in an English paper for the destruction of insects. The method is very efficacious, but Dr. Sace, of Neufchatal, in Switzerland, remarks to us that petroleum oil has a more powerful effect upon plants than upon insects; it kills them as if by fire. He saw a magnificent Norfolk pine (*Araucaria excelsa*) killed by being doctored with petroleum oil, applied in order to kill the insects. In this case the remedy is worse than the disease.

☞ An English inventor has an ingenious improvement in the ordinary watch key. It is for preventing the entrance of dust into the pipe of the key, and consists in fitting the tube with a plug which is kept at the mouth of the pipe by a spring, but is easily pushed back in winding up the watch. It effectually excludes the dust, and saves trouble and annoyance, whilst the key being made upon the Breguet principle is very perfect.

☞ The average production of door locks in England is estimated to exceed 4,500 dozens per week. That of America and Canada cannot be less than double that quantity. This is exclusive of padlocks, cabinet locks, and latches, which are, of course, made in much greater quantities. America, therefore, outrivals England in the quantity of her locks, but England far outstrips America in the quality of these and kindred other articles.

☞ It is stated that the magnesium light is likely to play an important part in the Abyssinian expedition. Mr. Mellor, the manager of the Magnesium Metal Company, is prepared to supply several hundred-weights of the powdered metal; and the authorities at Chatham have been for some time experimenting on the subject.

☞ A canal across the Florida peninsula is proposed. Such a canal would be less than a hundred miles long, and would shorten the voyage from New Orleans to New York several days, and be the means of avoiding the dangers of the Florida coast.

☞ Emigrants bring into this country an annual total of sixty millions dollars in gold.

☞ The attention of mine-owners, desirous of having a report upon their property, or of having it developed, is directed to Allen Heald's advertisement in this week's issue. Mr. H. can furnish guarantees as to his capabilities.

MISCELLANEOUS.

LEAD ORES WANTED.

LEAD ORES

Purchased or worked. Appiy

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PROPRIETORS AND MANUFACTURERS

OF THE

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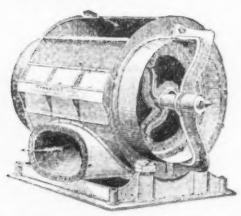

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LEADER PIPES,

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MACHINERY PATTERNS of all kinds

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LOAM AND DRY SAND CASTINGS

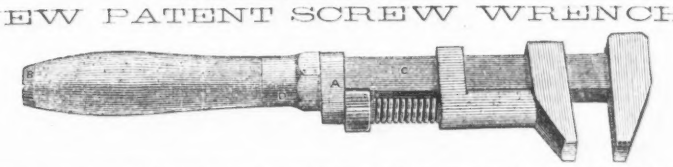
of every description, for mining purposes, made to order at the shortest notice and on reasonable terms.

W. McKINLEY. oct 26-6m R SMACK.

A MINING ENGINEER, A NATIVE OF SWEDEN, OF thirty eight years' experience, and having the best Swedish instruments, of well-known and tried value, and who has already discovered several mines in New Jersey, wishes a situation for exploring in the mining regions of New Jersey or Pennsylvania. Replies by letter may be made to V. A., at the office of this journal. Oct. 18:2t

COLLINS & CO.'S

NEW PATENT SCREW WRENCH.



All consumers have noticed that their wrenches first fail by reason of the forcing back of the handle, and by the springing of the bar. Our improvemen remedies both these defects, the bars being finished wider than any other wrench in market, and the handle cannot be displaced, as all strain on it is pre vented by the screw thimble, D. (see cut.) Already adopted as the best by he principal railroads and machine shops, and for sale by Hardware Dealers generally. Address COLLINS & CO., 212 Water street, New York.

10:v4:xm

FOR SALE.

VALUABLE GOLD QUARTZ PROPERTY FOR SALE

The undersigned desires to call the attention of capitalists to some QUARTZ PROPERTY, situated in

ABBEVILLE DISTRICT,

about Eight miles from Abbeville, South Carolina, that is, on the Dorn Belt, about Eight miles from the CELEBRATED DORN MINE, in the same district. The property comprises THREE VEINS OF GOLD QUARTZ, upon one of which a shaft has been sunk 56 feet to water level. The yield of gold, from quartz taken from this shaft and from the three veins, (on the surface,) is shown by the following certificate of Assay:

OFFICE AMERICAN JOURNAL OF MINING, 37 Park ROW, N. Y.
NEW YORK, October 7, 1867.

"J. A. TAILMADGE, ESQ.—SIR: The specimen of quartz, from Abbeville, South Carolina, submitted to us for assay, yields gold at the rate of $41 per ton of 2,000 lbs. avoirdupois, coin value. Respectfully,

(Signed) WESTERN & COMPANY

☞Two hundred acres of the property is timbered, being but eight miles from Abbeville, to which point there is railroad communication. Such as would like to see the property, with a view to purchasing, would find a journey to it attended with little inconvenience. Letters may be addressed to

J. A. TAILMADGE, Abbeville, S. C.

☞Specimens and a map of the property may be seen at the office of the AMERICAN JOURNAL OF MINING. oct12:4t

MISSOURI PINE AND MINERAL LAND.

FOR SALE my ONE THIRD INTEREST in a tract of 4000 acres, with two steam Saw Mills now running, and lead deposits in course of development. Send for description and map. THOMAS ALLEN,

15:4:6t 722 South Fourth street, St. Louis, Mo.

ONE NO. 3 CONDIT & STEVENS, and ONE NO. 2 SEWELL & CAMERON

STEAM PUMP,

in perfect order, one 14 by 30, one 10 by 28, one 6½ by 16.

STEAM ENGINES,

One Portable Engine, new, 8 horse power, price $800; one 45 horse power Locomotive Boiler; one 4 horse, two 10 horse, two 12 horse power Upright Boilers; one 25 and one 12 horse; two Flue Boilers, one new five foot Blower, two 20 inch do., one Blower Engine, 12 by 12. W. S. FOX & CO.,

17-4-4t 470 Water street, Brooklyn.

A LEAD MINE FOR SALE OR LEASE.

The undersigned desires to communicate with some person or persons that will furnish capital to push forward the development of a lead mine, situated near Shullsburg, Lafayette Co., Wisconsin, that promises largely. The locality is within the richest mining district of Wisconsin. From the main shaft, which is now 106 feet in depth, seventy-five tons of lead ore have been taken of the very best and purest quality, and from other shafts varying in depth from thirty to sixty feet, 150 tons more have been taken, all within an area which would be covered by a square of two acres of ground. Upon the property there is a house for the accommodation of Miners, an engine of thirty horse power, a pump of 16 inch bore, and all the necessary tools for mining purposes. Also furnishing for the house, etc., etc. This property consists of the fee simple of 120 acres of land, on which are the main and most of the shafts, and of leases—equivalent to perpetual leases—of 120 adjoining land, at one-tenth royalty. Specimens of ore from the main shaft may be seen at the office of the AMERICAN JOURNAL OF MINING, 37 Park Row, N. Y. Address

12:4. 4t EDWARD MELOY, Shullsburg, Lafayette Co., Wis.

COAL.

SHIPPING FACILITIES AT ELIZABETHPORT.

The Mineral Spring Coal Company offer facilities for shipping some good coal at their new Pier 9, Elizabethport. To Lehigh operators, for stocking, it is quite advantageous. For terms, accomodation, &c., apply to

JOSEPH E. DEAN,

Oct. 12:4t Box 1,023, Boston.

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SUCCESSORS TO DANIEL PACKER AND CO.,

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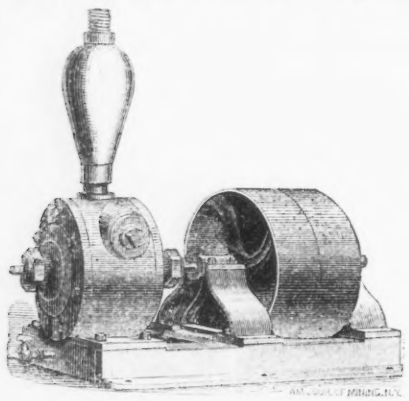

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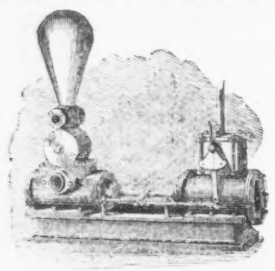

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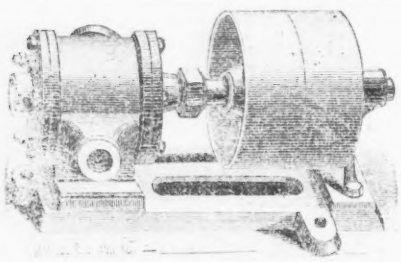

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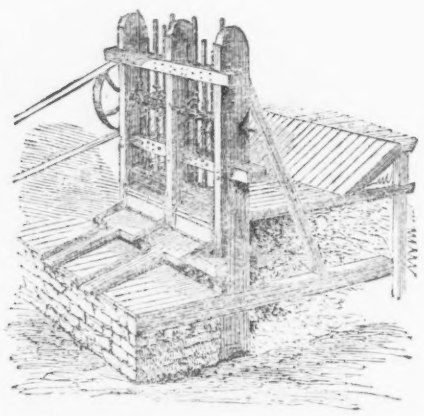

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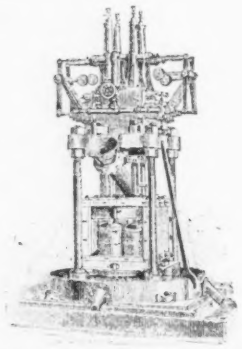

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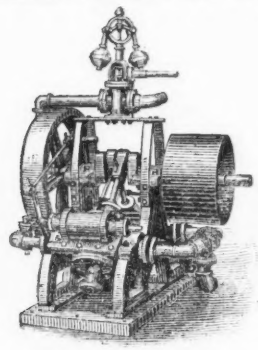

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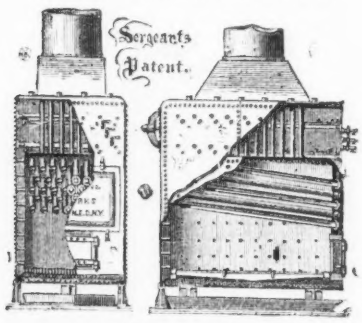

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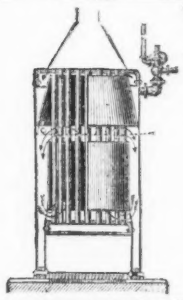

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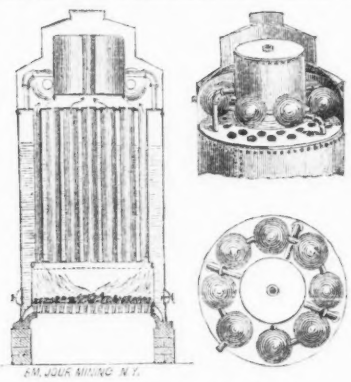

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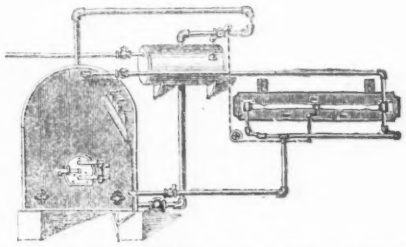

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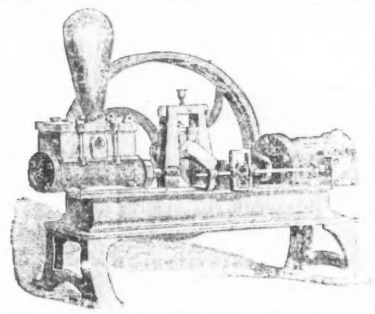

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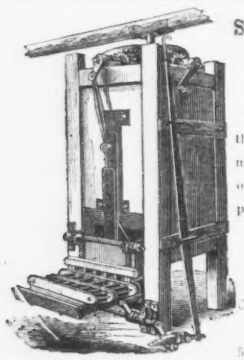

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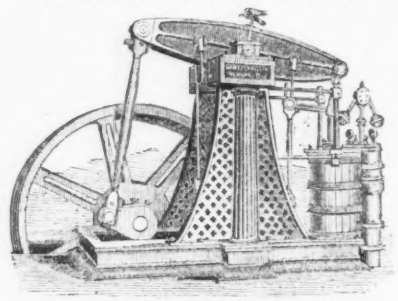

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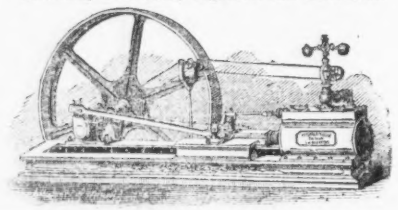

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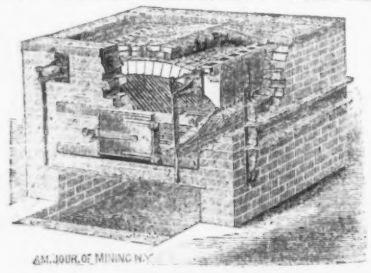

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